Vol. 1018 Number 1

OFFICIAL GAZETTE

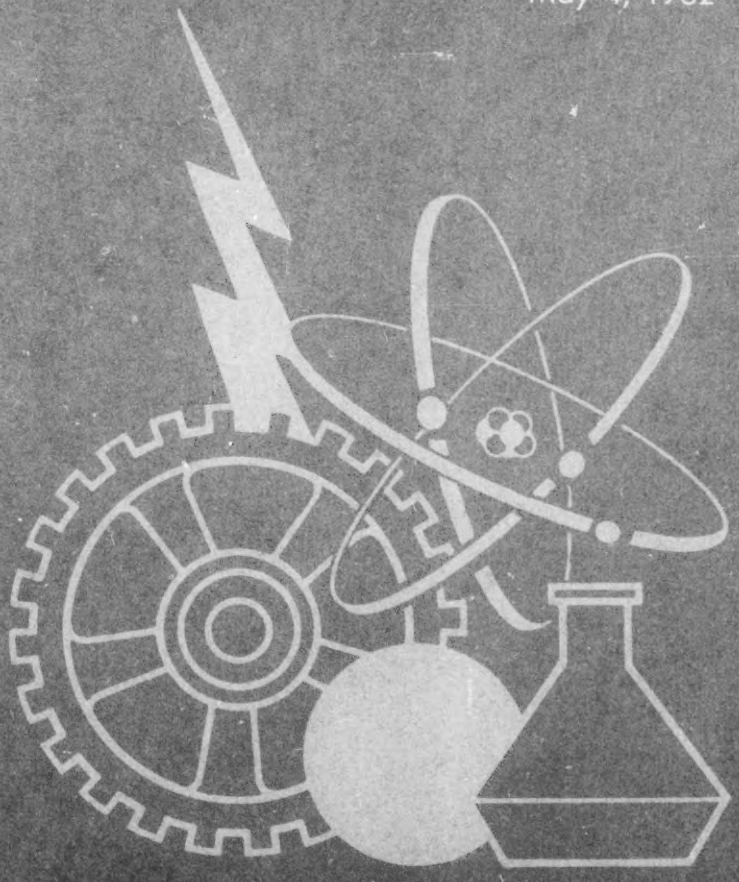
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

May 4, 1982



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

May 4, 1982 Volume 1018 Number 1

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly, subscription $360.00 per annum for first-class mailing, also available as fourth-class mail at $250.00 domestic; $312.50 foreign; foreign first-class mailing rates will be furnished upon request; single copies each, $6.50 domestic, $8.15 foreign.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,323,979, Re. S.N. 343,783, Filed Jan. 29, 1982, Cl. 162/167, METHOD OF IMPROVING THE DRAINAGE RATE IN FORMING PAPER BY INCORPORATING A REACTION PRODUCT OF POLYACRYLAMIDE, FORMALDEHYDE AND DIALKYLAMINE IN THE FURNISH, William A. Foster, et al., Owner of Record: *The Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 173

3,814,296, Re. S.N. 354,399, Filed Mar. 3, 1982, Cl. 222/220, METERING APPARATUS FOR PLASTIC MATERIALS, Alfons Tschritter, Owner of Record: *Colortronic Reinhard & Co., K.G., Promenade, West Germany,* Attorney or Agent: G. Franklin Rothwell, Ex. Gp.: 311

4,064,376, Re. S.N. 345,968, Filed Feb. 5, 1982, Cl. 179/146H, SOUND REPRODUCTION SYSTEM AND DEVICE, Kyoto Yamada, Owner of Record: *Bodysonic Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: James C. Wray, et al., Ex. Gp.: 235

4,090,970, Re. S.N. 345,258, Filed Feb. 2, 1982, Cl. 252/42.7, ANTIOXIDANT COMPOSITIONS, Milton Braid, Owner of Record: *Mobil Oil Corp., New York, N.Y.,* Attorney or Agent: Claude E. Setliff, Ex. Gp.: 116

4,129,417, Re. S.N. 351,775, Filed Feb. 24, 1982, Cl. 23/230B, MULTISYSTEM TEST MEANS, William I. White, Owner of Record: *Miles Laboratories, Inc., Elkhart, Ind.,* Attorney or Agent: L. E. Davidson, et al., Ex. Gp.: 173

4,223,215, Re. S.N. 358,163, Filed Mar. 15, 1982, Cl. 250/211R, PHOTODETECTOR ARRANGEMENT AND CIRCUITS, Morteza M. Chamran, Owner of Record: *The Perkin-Elmer Corp., Norwalk, Conn.,* Attorney or Agent: Robert A. Hays, et al., Ex. Gp.: 252

4,254,759, Re. S.N. 357,833, Filed Mar. 12, 1982, Cl. 126/307A, AUTOMATIC DAMPER MEANS AND CONTROLS THEREFOR, Robert H. Schmidt, Owner of Record: *Inventor,* Attorney or Agent: Robert A. Spray, Ex. Gp.: 345

4,263,775, Re. S.N. 349,075, Filed Feb. 16, 1982, Cl. 57/22, METHOD AND APPARATUS FOR SPLICING SPUN YARNS, Hirosi Mima, Owner of Record: *Murata Kikai Kabushiki Kaisha, Minarniku, Kyotoshi, Japan,* Attorney or Agent: W. Robert Spensley, et al., Ex. Gp.: 244

4,276,115, Re. S.N. 356,346, Filed Mar. 9, 1982, Cl. 159/1, PROCESS AND APPARATUS FOR DEHYDRATING WASTE SOLIDS CONCENTRATES, Charles Greenfield, et al., Owner of Record: *Hanover Research Corp., East Hanover, N.J.,* Attorney or Agent: Richard L. Cannaday, Ex. Gp.: 177

4,286,947, Re. S.N. 356,161, Filed Mar. 8, 1982, Cl. 433/72, INTRA-ORAL ALIGNING ASSEMBLY, Karl Daiberl, Owner of Record: *Inventor,* Attorney or Agent: Michael J. Striker, et al., Ex. Gp.: 333

4,301,013, Re. S.N. 358,113, Filed Mar. 15, 1982, Cl. 210/637, SPIRAL MEMBRANE MODULE WITH CONTROLLED BY-PASS SEAL, Duilio Setti, et al., Owner of Record: *Abcor, Inc., Wilmington, Mass.,* Attorney or Agent: Richard P. Crowley, Ex. Gp.: 176

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 29,221, Reexam. No. 90/000,180, Requested: Mar. 29, 1982, Cl. 188/378, ACCELERATION SENSITIVE MOTION SNUBBER, Elmer Chensheng Yang, Owner of Record: *Pacific Scientific Co., Anaheim, Calif.,* Attorney or Agent: Louis J. Knobbe, et al., Ex. Gp.: 315, Requester: Robert J. Schiller, Waltham, Mass.

3,541,647, Reexam. No. 90/000,177, Requested: Mar. 22, 1982, Cl. 24/30.5, CASING CLIP, James W. Marietta, Jr., Owner of Record: *James W. Marietta, Jr., Los Angeles, Calif.,* Attorney or Agent: Georges A. Maxwell, Ex. Gp.: 350, Requester: S. Blondeheim & Co., Inc., Oakland, Calif.

4,153,816, Reexam. No. 90/000,181, Requested: Apr. 1, 1982, Cl. 370/81, TIME ASSIGNMENT SPEECH INTERPOLATION COMMUNICATION SYSTEM WITH VARIABLE DELAY, William A. Morgan, Owner of Record: *Storage Technology Corp., Louisville, Colo.,* Attorney or Agent: Woodcock, et al., Ex. Gp.: 230, Requester: Storage Technology Corp., Louisville, Colo.

4,247,773, Reexam. No. 90/000,186, Requested: Apr. 2, 1982, Cl. 250/339, METHOD FOR QUANTITATIVELY DETERMINING FAT IN A FAT-CONTAINING SAMPLE, Sten A. Nexo, et al., Owner of Record: *Foss America, Inc.,* Attorney or Agent: Hubbell, et al., Ex. Gp.: 256, Requester: Berwind Corp., Philadelphia, Pa.

4,247,896, Reexam. No. 90/000,182, Requested: Apr. 1, 1982, Cl. 370/81, FIXED SPEECH BUFFER MEMORIES FOR SIGNALLING WITHOUT AN ORDER WIRE, Thomas B. Cannon, et al., Owner of Record: *Storage Technology Corp., Louisville, Colo.,* Attorney or

Agent: Woodcock, et al., Ex. Gp.: 236, Requester: Storage Technology Corp., Louisville, Colo.

4,285,174, Reexam. No. 90/000,185, Requested: Apr. 2, 1982, Cl. 52/81, BUILDING STRUCTURE, Brian V. Knight, Owner of Record: *Brian V. Knight, New Hartford, N.Y.,* Attorney or Agent: Walter F. Wessendorf, Jr., Ex. Gp.: 350, Requester: CampCore, Inc., Liverpool, N.Y.

4,287,216, Reexam. No. 90/000,183, Requested: Apr. 1, 1982, Cl. 426/93, CHOCOLATE CONFECTION CONTAINING CARBONATED HARD CANDY CRYSTALS DISPERSED THEREIN, Santi F. Mangano, Owner of Record: *L. B. P. Industrie Buitoni Perugina S.p.A., Perugina, Italy,* Attorney or Agent: Cushman, et al., Ex. Gp.: 170, Requester: General Foods Corp., White Plains, N.Y.

Patents Available for License or Sale

3,214,172. CHANCE SELECTIVE RACING GAME. *Walter Williams,* 48 Pearsall Ave., Freeport, N.Y. 11520.

3,669,474. COUPLED JOINT OF AXIALLY ALIGNED ELONGATED MEMBERS. *Richard M. Bode,* 7403 5th Ave., Kenosha, Wis. 53140.

3,952,733. ARM SUPPORT, *Ester B. Williams,* 4307 Gilray Dr., Baltimore, Md. 21214

4,081,993. DEVICE FOR MEASURING THE MAGNITUDE AND DIRECTION OF COMPRESSION FORCES. *Bergwerksverband Gmbh,* Franz-Fischer-Weg 61, Germany. Correspondence *Michael J. Striker,* 360 Lexington Ave., New York, N.Y. 10017.

4,186,911. JACK WITH TRANSLATION AND ROTATION MOVEMENTS. *Jeane Pierre Huet* and *Alain Curtois.* Correspondence to: *Edwin E. Greigg,* Pennsylvania Bldg., 425 Thirteenth St., N.W. Washington, D.C. 20004.

4,190,280. WHEELED PATIENTS SUPPORT. *Stephen C. Donahoe,* Professional Ambulance Service, 505 North Dupont St., Wilmington, Del. 19805.

4,136,764. MOTHER ALICE'S BREAD VENDING MACHINE. *Alice Johnson,* 8650 Belford Ave., #1, Los Angeles, Calif. 90045.

4,193,525. BICYCLE ATTACHED BEVERAGE CONTAINER CARRIER. *Grold L. Sommers,* 1770 Whitney, Idaho Falls, Id. 83402.

4,204,467. DE-STONING AND SIMULTANEOUSLY FILLING A DRUPE. *Lester G. Peters,* General Delivery, Bartlet, N.H. 03812.

4,299,268. AUTOMATICALLY CONTROLLED CASTING PLANT. *James A. Oliff, Stevens, Davis, Miller & Mosher,* 1911 Jefferson Davis Hwy., Suite 600, Crystal Mall 1, Arlington, Va. 22202, 703-920-8900.

4,220,443. ELECTRO-MECHANICAL FIREARMS DEVICE. *Russell M. Bear,* 707 Stevenson Rd., Severn, Md. 21144.

4,303,125. HEAT EXCHANGE STRUCTURAL ELEMENT. *Karl H. Vahlbrauk,* Germany. Correspondence To: *Michael J. Striker,* 360 Lexington Ave., New York, N.Y. 10017.

4,242,796. TREE SAW. *Victor Barausch,* 4902 Imperial St., Bellaire, Tex. 77401.

4,274,397. SOLAR HEATER. *Clifford W. Hill,* 844 S. Thunderbird Rd., Florence, S.C. 29501.

The RCA Corp. offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corp., Sr. Vice President, Licensing, 30 Rockefeller Plz., New York, N.Y. 10020.

4,309,265. CATHODE MASK KNOB.

4,309,456. METHOD AND APPARATUS FOR COATING RECORDED DISCS WITH A LUBRICANT.

4,309,717. COAXIALLY MOUNTED HIGH FREQUENCY LIGHT DETECTOR HOUSING.

4,309,719. DUAL STANDARD PAL-SECAM RECEIVER CIRCUITRY.

4,309,721. ERROR CODING FOR VIDEO DISC SYSTEM.

4,309,722. VIDEO DISC PLAYER NOISE REDUCTION CIRCUIT.

4,309,725. SIGNAL PROCESSOR FOR BEAM-SCAN VELOCITY MODULATION.

4,310,814. TRANSMISSION LINE HYBRID JUNCTION.

4,310,910. OPTIMAL POLARIZATION FOR THE OPTICAL READOUT OF HIGH DENSITY VIDEO RECORDING.

4,310,913. STYLUS TRACKING AID USING TWO BIMORPH ELEMENTS LONGITUDINALLY ALIGNED.

4,310,914. SKIPPER-ASSISTED ACTIVE SEARCH.

4,310,915. DUAL PARALLELOGRAM CUTTERHEAD SUSPENSION APPARATUS.

4,311,154. NONSYMMETRICAL BULB APPLICATOR FOR HYPERTHERMIC TREATMENT OF THE BODY.

4,311,939. ALKALI ANTIMONIDE LAYER ON A BERYLLIUM-COPPER PRIMARY DYNODE.

4,311,944. CRT WITH DIPOLAR DEFLECTION AND QUADRUPOLAR-FOCUSING COLOR-SELECTION STRUCTURE.

4,311,967. COMPENSATION FOR TRANSISTOR OUTPUT RESISTANCE.

4,312,013. NON-LINEAR APERTURE CORRECTION CIRCUIT.

4,312,025. MAGNETIC VARIABLE CAPACITOR.

4,312,680. METHOD OF MANUFACTURING SUBMICRON CHANNEL TRANSISTORS.

4,313,062. BIDIRECTIONAL DEFLECTOR DRIVER FOR VIDEO DISC.

4,313,078. BATTERY CHARGING SYSTEM.

4,313,106. ELECTRICALLY PROGRAMMABLE LOGIC ARRAY.

4,313,130. KEYING SIGNAL GENERATOR WITH FALSE OUTPUT IMMUNITY.

4,313,134. TRACK ERROR CORRECTION SYSTEM AS FOR VIDEO DISC PLAYER.

4,313,188. METHOD OF RECORDING AN ABLATIVE OPTICAL RECORDING MEDIUM.

4,313,189. STYLUS POSITION SENSOR FOR VIDEO DISC PLAYER APPARATUS.

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patents should be addressed to: Mr. Arnold E. Renner, Division Patent Counsel, Industrial Electronics Systems Division, General Electric Co., 1501 Roanoke Blvd., Salem, Va. 24153.

3,392,696. SHIP.

3,801,796. SYNCHRONIZATION SCHEME.

4,039,926. CURRENT FED INVERTER WITH COMMUTATION INDEPENDENT OF LOAD INDUCTANCE.

4,066,938. INPUT CURRENT MODULATIONS TO REDUCE TORQUE PULSATIONS IN CONTROLLED CURRENT INVERTER DRIVES.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Room 218, Schenectady, N.Y. 12345.

4,313,300. NOx REDUCTION IN A COMBINED GAS-STEAM POWER PLANT.

Applications for license may be addressed to: Patent Counsel, Aerospace Control Systems Department, General Electric Co., P.O. Box 5000, Binghamton, N.Y. 13902

U.S. 4,083,018. TUNABLE LASER SYSTEM.

U.S. 4,235,153. LINEAR MOTION, ELECTROMAGNETIC FORCE MOTOR.

Applications for license may be addressed to: Patent Counsel, Mobile Radio Products Department, Mobile Communcations Business Division, General Electric Co., Mountain View Rd., Lynchburg, Va. 24502.

U.S. [illegible]nt 4,312,024. entitled "FIXED ADJUSTED FLAT CAPACITOR".

Applications for license may be addressed to: Patent Counsel, Large Transformer Business Division, General Electric Co., 100 Woodlawn Ave., Pittsfield, Mass. 01201.

Re. 30,490. TRIGGERING CIRCUIT FOR SPARK GAP ASSEMBLIES.

4,168,461. VOLTAGE REGULATOR PROVIDING WIDE RANGE OF VOLTAGE REGULATION.

4,097,852. FAULT DETECTOR FOR LIQUID IMMERSED INDUCTIVE APPARATUS.

4,198,443. SINTERLESS ZINC OXIDE VARISTOR DEVICES.

4,288,772. DIELECTRIC LIQUID IMPREGNATED WITH GASES FOR USE IN TRANSFORMERS.

4,298,853. COMPACT HIGH VOLTAGE SHUNT REACTOR.

Applications for license may be addressed to: Patent Counsel, Large Transformer Business Division, General Electric Co., 100 Woodlawn Ave., Pittsfield, Mass. 01201.

3,883,107. LOAD CARRYING BED WITH ADJUSTABLE ANCHOR.

3,883,206. CENTERING AND ANCHORING DEVICE.

3,917,985. TRANSFORMER/TRANSMISSION LINE INTERCONNECT SYSTEM.

4,011,535. VAPORIZATION COOLED TRANSFORMER.

Application for license may be addressed to the General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,283,701. OVERSHOOT COMPENSATED THERMOSTAT.

4,303,827. HEATING APPLIANCE AND THERMOSTATE MOUNT.

Applications for license may be addressed to Patent Counsel, Large Steam Turbine- Generator Division, General Electric Co., 1 River Rd., Schenectady, N.Y. 12345.

4,237,454. SYSTEM FOR MONITORING BEARINGS AND OTHER ROTATING EQUIPMENT.

4,264,834. FLEXIBLE SERRATED ABRADABLE STATOR MOUNTED AIR GAP BAFFLE FOR A DYNAMOELECTRIC MACHINE.

4,289,803. FOUNDRY MOLD TREATING COMPOSITIONS AND METHODS OF MAKING SAME.

4,302,227. BAFFLED MOISTURE SEPARATOR.

Applications for licenses may be addressed to General Electric Co., Industrial Motor Patent Operation, 1 River Rd., Schenectady, N.Y. 12345, Attention: Patent Counsel.

3,715,610. DYNAMOELECTRIC MACHINE COOLED BY A ROTATING HEAT PIPE.

3,839,653. FLEXIBLE LOOP, HARD SLOT COILS FOR DYANMOELECTRIC MACHINE.

3,853,817. TIN CONTAINING ESTERMIDE POLYMER RESINS AND METHOD OF FORMING.

3,858,068. DYNAMOELECTRIC MACHINE HAVING VENTILATING MEANS.

3,942,056 BRUSH HOLDER AND RIGGING ASSEMBLY FOR A DYNAMOELECTRIC MACHINE.

4,115,915. PROCESS FOR MANUFACTURING MOTOR HAVING WINDINGS CONSTRUCTED FOR AUTOMATED ASSEMBLY.

4,136,296. HIGH-SPEED, LAMINATED ROTOR FOR HOMOPOLAR INDUCTOR ALTERNATOR.

4,159,434. AXIAL GAP INDUCTOR ALTERNATOR.

4,286,182. LAMINATED ROTOR FOR A DYNAMOELECTRIC MACHINE AND METHOD OF MAKING SAME.

Applications for license may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Co., Appliance Park, Louisville, Ky. 40225.

3,576,137. TIME-ACCUMULATING MEANS FOR COIN-OPERATED TIMER MECHANISM.

3,822,571. LIQUID DIVERTER SYSTEM FOR AN AUTOMATIC WASHING MACHINE.

3,891,358. SUCTION VALVE FOR ROTARY COMPRESSOR.

4,016,731. FLEXIBLE COUPLING ASSEMBLY.

4,024,722. HEAT PUMP FROST CONTROL SYSTEM.

4,141,311. LIQUID LEVEL INDICATING DEVICE FOR MOVABLY MOUNTED DISPENSER TANKS.

4,147,297. LAUNDRY MACHINE IMPROVED WATER TEMPERATURE CONTROL AND METHOD.

4,162,621. BASKET OVERFLOW FOR WATER RECIRCULATING CLOTHES WASHING MACHINE.

4,168,615. CLOTHES WASHING MACHINE WITH WATER RECIRCULATION.

4,250,494. CHARGE TRANSFER ANALOG-TO-DIGITAL CONVERTER WITH PRECISE CHARGE CONTROL.

4,250,504. GAS DISCHARGE DISPLAY CIRCUIT.

4,268,779. LOAD CONTROL CIRCUIT.

4,282,416. UNITED OVER STRUCTURE FOR A MICROWAVE OVEN.

4,282,720. REFRIGERATOR AIR BAFFLE CONTROL.

4,286,377. METHOD OF MANUFACTURE FOR A RESISTANCE HEATER AND TEMPERATURE SENSOR.

4,287,939. AIR CONDITIONING CONTROL SYSTEM WITH LOCAL AND REMOTE CONTROL CAPABILITIES.

4,290,061. ELECTRICALLY INTEGRATED TOUCH INPUT AND OUTPUT DISPLAY SYSTEM.

4,290,660. MOVABLE TOEKICK FOR CONVERTIBLE DISHWASHER.

4,293,170. THRUST BEARING ASSEMBLY.

4,295,692. DISHWASHER TUB ASSEMBLY.

Bristol-Myers Co. announces, pursuant to and subject to the terms of a Final Judgment entered Feb. 10, 1982 in *United States* v. *Bristol-Myers Co., et al.*, Civil Action 822-70, in the United States District Court for the District of Columbia, the availability of certain covenants not to sue and licenses under certain U.S. patents and know-how relating to the manufacture, use, or sale of certain semisynthetic penicillins.

Inquiries should be made in writing addressed to:

Vice President and Counsel
Bristol Laboratories Division
of Bristol-Myers Co.
P.O. Box 657
Syracuse, N.Y. 13201

PATENT NOTICES

Certificates of Correction for the Week of May 4, 1982

4,042,320	4,270,030	4,302,310	4,311,673
4,086,990	4,272,100	4,302,557	4,312,018
4,140,497	4,273,363	4,303,385	4,312,428
4,147,672	4,273,553	4,304,045	4,312,445
4,165,426	4,274,097	4,304,361	4,312,720
4,195,869	4,276,704	4,304,670	4,312,930
4,199,748	4,276,903	4,304,677	4,313,330
4,205,949	4,278,339	4,304,854	4,313,375
4,206,361	4,282,925	4,304,943	4,313,417
4,209,318	4,286,607	4,305,373	4,314,247
4,210,763	4,288,109	4,305,782	4,314,396
4,212,863	4,288,279	4,305,899	4,314,553
4,223,793	4,289,403	4,306,361	4,315,068
4,224,015	4,289,983	4,306,470	4,315,276
4,226,610	4,291,149	4,306,529	4,315,973
4,228,544	4,295,046	4,307,083	4,316,026
4,229,925	4,296,589	4,307,159	4,316,470
4,233,253	4,297,242	4,307,491	4,316,879
4,245,713	4,297,869	4,308,198	4,316,884
4,255,792	4,297,870	4,308,283	4,316,954
4,255,846	4,298,602	4,308,379	4,317,216
4,260,505	4,298,634	4,308,397	4,317,421
4,262,349	4,299,344	4,308,938	4,317,448
4,262,581	4,300,095	4,309,334	4,317,666
4,263,798	4,300,136	4,309,440	4,318,811
4,264,464	4,301,026	4,309,630	4,319,040
4,264,470	4,301,539	4,310,161	4,319,185
4,265,323	4,301,988	4,310,628	4,319,254
4,265,654	4,302,062	4,311,027	

Disclaimers

3,916,862.—*Jerry A. Clouse,* Washington; *John H. Parks,* Peoria; and *Millard D. Potter,* Bartonville, Ill. TORQUE RISE LIMITING DEVICE. Patent dated Nov. 4, 1975. Disclaimer filed Feb. 19, 1982, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claim 1 of said patent.

4,068,721.—*Robert J. Trayler,* Braidwood, Ill. BULDOZER ASSEMBLY WITH LOCKING PIN AND METHOD. Patent dated Jan. 17, 1978. Disclaimer filed Mar. 2, 1982, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to all claims of said patent.

4,112,797.—*David R. Pearl,* West Hartford, Conn. FLUID JET CUTTING APPARATUS. Patent dated Sept. 12, 1978. Disclaimer filed Feb. 4, 1982, by the assignee, *Gerber Garment Technology, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 6, 9, 10, 17, 18, 19 and 23 of said patent.

4,117,834.—*Richard J. McPartland; F. Gordon Foster* and *David J. Kupfer,* Pittsburgh, Pa. PHYSIOLOGICAL MOTOR ACTIVITY MONITORING APPARATUS. Patent dated Oct. 3, 1978. Disclaimer filed Feb. 5, 1982, by the inventors.

Hereby enters this disclaimer to claims 8, 9 and 10 of said patent.

4,294,617.—*Philippe Schlicklin, Nancy; Anne-Marie Mertzweiller nee Maillard, Maidieres* and *Jacques Ploussard,* Pont a Mousson, France. COMPOSITIONS AND METHODS FOR THE DENATURATION OF WATER-BASE PAINTS. Patent dated Oct. 13, 1981. Disclaimer filed Mar. 2, 1982, by the assignee, *Air Industrie.*

Hereby enters this disclaimer to claim 4 of said patent.

Dedication

4,215,748.—*Clare A. Pace,* Anchorage, Ak. and *Ronald E. Pringle,* Houston, Tex. LOCKOUT FOR A WELL INJECTION VALVE. Patent dated Aug. 5, 1980. Dedication filed Oct. 1, 1981, by the assignee, *Camco, Inc.*

Hereby dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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New York	Albany: New York State Library	(518) 474-5125
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	Cleveland Public Library	(216) 623-2870
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PATENT EXAMINING CORPS

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CONDITION OF PATENT APPLICATIONS AS OF March 20, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-02-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-22-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	6-18-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-09-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-28-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	5-12-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-18-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-28-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-06-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	5-30-80

Expiration of patents: The patents within the range of numbers indicated below expire during March 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,171,131 to 3,176,313, inclusive

Plant Patents ..... Numbers 2,486 to 2,489 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MAY 4, 1982

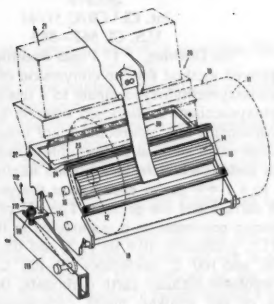
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T101,801
APPARATUS AND METHOD FOR ACCURATELY SETTING A GAP BETWEEN MATING SURFACES ON A COPIER MAGNETIC BRUSH DRUM AND ROLLER

James E. Bierschbach, 1431 S. Sherman St., Longmont, Colo. 80501; Raymond A. Daniels, 898 Pimlico Ct., Boulder, Colo. 80303; Robert L. Fey, 1222 Princeton Dr., Longmont, Colo. 80501; Ben A. Nilsson, 1125 Toedtli Dr., Boulder, Colo. 80303, and Roberta R. Tanner, 2117 Logan La., Longmont, Colo. 80501

Filed Aug. 28, 1980, Ser. No. 182,241
Int. Cl.[3] G01B *3/30*
U.S. Cl. 33—168 R
2 Sheets Drawing. 12 Pages Specification

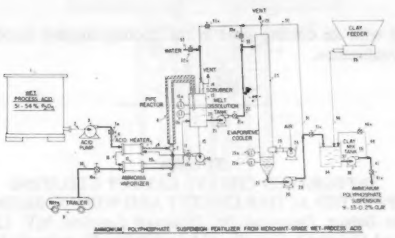


An electrophotographic copier's magnetic brush roller applies developer material to the surface of a photoconductor drum. Two parallel centerlines define the photoconductor drum surface a fixed gap distance from the magnetic brush roller's mating surface. Moving the magnetic brush roller adjusts the gap distance between the mating surfaces. Two sandwiches of conventional, standard-thickness, flexible, plastic sheets form tools; one having a total thickness slighty larger than the desired gap between the mating surfaces of the drum and roller, and the other having a thickness slightly less than the desired gap. The desired gap is set by separating the drum and roller surfaces, inserting the tool that is slightly smaller than the gap and closing the gap sufficiently so that each of the mating surfaces on the drum and roller contacts one surface of the tool. The surfaces are then separated, the tool is withdrawn, and the second tool, which is slightly larger than the desired gap spacing, is inserted and the mating surfaces of the drum and roller are closed together until the second tool cannot be further inserted. The gap is accurately set when the first tool may be pushed into the gap, without buckling, but the second tool may not.

T101,802
LOW POLYPHOSPHATE SUSPENSION FERTILIZERS FROM WET-PROCESS ACID

Horace C. Mann, Jr., Box 345, Rte.4, Killen, Ala. 35645, and Robert S. Meline, 310 McKinley Ave., Florence, Ala. 35630

Filed Oct. 6, 1980, Ser. No. 194,642
Int. Cl.[3] C05B *7/00*
U.S. Cl. 71—34
3 Sheets Drawing. 34 Pages Specification



An energy efficient process and apparatus is described that consists of a pipe reactor, melt dissolution tank, acid and ammonia heat exchangers, product cooler, and clay addition facilities in which a concentrated polyphosphate containing ammonium phosphate suspension fertilizers is produced that can be stored and handled at temperatures well below 0° F. The suspension is produced from merchant-grade wet-process phosphoric acid which is ammoniated in a unique enlarged pipe-type reactor sized to have throughputs of 20–100 pounds P_2O_5/hr-in^2 and 0.25–2 pounds P_2O_5/hr-in^3 of internal reactor area and volume, respectively, and which can be operated for extended periods without clogging. All of the heat required by the process is obtained by transferring a portion of the heat of ammoniation from the hot liquid in the melt dissolution tank to the incoming acid and ammonia streams. The resultant product contains 10 to 40 percent polyphosphate and when produced within an N:P_2O_5 weight ratio range of 0.265–0.335 and when containing 40–47 percent N + P_2O_5, has excellent low temperature storage and handling properties. Operation outside the specified composition range will reduce the maximum plant food concentration possible and may cause some of the ammonium phosphate salts to crystallize and foul the heat-transfer surfaces.

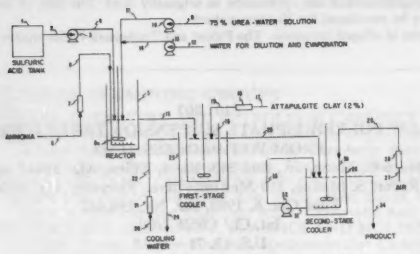
T101,803
PRODUCTION OF UREA-AMMONIUM SULFATE SUSPENSION FERTILIZER

Thomas M. Jones, 208 Stephenson Ct., Sheffield, and Jeffrey L. Boles, 505-C Elder St., Florence, both of Ala. 35660

Filed Jul. 27, 1981, Ser. No. 287,399
Int. Cl.[3] C05C *9/00*
U.S. Cl. 71—30
1 Sheets Drawing. 19 Pages Specification

A process for production of highly concentrated nitrogen sulfur suspension fertilizers, with excellent long-term storage and handling properties, from ammonia, sulfuric acid, and urea. Satisfactory operation of the process and production of high-quality suspensions requires the use of a novel cooling procedure. For prevention of scale formation and production

of small crystals, the product is cooled in two or more stages with gelling type clay added prior to or during crystallization and with air cooling used in the cooling stage(s) involving crystallization.



PRODUCTION OF UREA - AMMONIUM SULFATE SUSPENSION FERTILIZER USING A TWO-STAGE COOLING SYSTEM TO PREVENT SCALE FORMATION

T101,804

INTEGRATED CIRCUIT LAYOUT UTILIZING SEPARATED ACTIVE CIRCUIT AND WIRING REGIONS

John Balyoz, Deerwood Dr., Hopewell Junction, N.Y. 12533, and Algirdas J. Gruodis, 52 Edgehill Dr., Wappingers Falls, N.Y. 12590

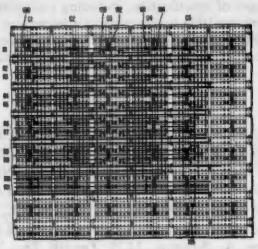
Continuation of Ser. No. 9,712, Feb. 5, 1979, abandoned, which is a division of Ser. No. 830,715, Sep. 6, 1977, abandoned. This application May 5, 1980, Ser. No. 146,909

Int. Cl.[3] H01L *27/04*

U.S. Cl. 357—71

6 Sheets Drawing. 30 Pages Specification

An LSI masterslice wiring technique, employing an array of elongated logic cells. A first level of metallization includes a first set of elongated, generally parallel conductors, orthogonal to the elongated logic cells and selectively contacting the cells. A second level of metal conductors, overlying and insulated from the first set, extends orthogonal to the first set, and thus parallel to the elongated logic cells. The second set includes both conductors passing over the areas of the logic cells and conductors lying between the logic cells. Conductors of the second set are selectively connected to conductors of the first set. This application has the same disclosure as that of Defensive Publication T100,501, published Apr. 7, 1981, but the abstracts are in conflict.



T101,805

METHOD FOR PRODUCING ALKALI METAL SALTS OF CARBOXYMETHYLOXYSUCCINIC ACID

Vincent Lamberti, 11 Holly Dr., Upper Saddle River, N.J. 07458

Continuation-in-part of Ser. No. 157,615, Jun. 9, 1980, abandoned, which is a continuation of Ser. No. 960,807, Nov. 15, 1978, abandoned. This application Jul. 13, 1981, Ser. No. 283,573

Int. Cl.[3] C07C *51/41*

U.S. Cl. 562—583

No Drawing. 17 Pages Specification

An improved method for the conversion of an alkaline earth metal carboxymethyloxysuccinate to a trialkali metal carboxymethyloxysuccinate is disclosed wherein a mixture of alkali metal carbonates and bicarbonates are utilized to precipitate the alkaline earth metal as an insoluble carbonate. The amount of alkali metal carbonate/bicarbonate mixture utilized corresponds to a 1–6% molar excess over the number of moles of alkaline earth metal ion present. The pH of the reaction medium during precipitation is maintained in the range of about 10 to 11.5, preferably 10.6 to 11.0, and the temperature, between 80° and 100° C., preferably 90°–100° C. After separation of the insoluble alkaline earth carbonate, there is obtained a solution of the trialkali metal carboxymethyloxysuccinate containing a low calcium level, namely less than about 0.2% basis the percent of trialkali metal carboxymethyloxysuccinate present.

REISSUES

MAY 4, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

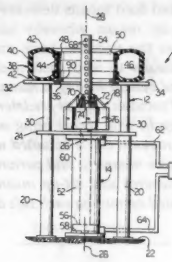
Re. 30,918
TIRE AND CENTER SUPPORT ASSEMBLING APPARATUS

Terry G. Baer, Edelstein, and Wayne A. Klopfenstein, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Original No. 4,108,233, dated Aug. 22, 1978, Ser. No. 782,670, Mar. 30, 1977. Application for reissue Jul. 9, 1980, Ser. No. 167,089

Int. Cl.³ B60C *25/06*

U.S. Cl. 157—1.37 **6 Claims**



1. A tire and center support assembling apparatus, for installing a split rim into a tire, comprising:

a tire supporting frame having a central axis *and defining a central opening concentric with the axis;*

a ring releasably connected to the frame in overlapping relationship to said opening and being of a construction sufficient for positioning the split rim into a preselected axial location within the tire;

a powered actuator connected to the frame and having a movable element; and

shoe assembly means for expanding the rim into a preselected interference fit position within the tire in response to selective movement of the element of the actuator along the axis, the shoe assembly means having a plurality of similar shoes individually having a radially outer cylindrical surface portion and linkage means for radially moving and expanding each of the shoes in a plane perpendicular to the central axis into engagement with the rim while maintaining the outer cylindrical surface portions collectively in generally concentric and aligned relation with the central axis, the linkage means being connected to the movable element.

Re. 30,919
HIGH-SPEED ROTATING CRUSHING MACHINERY

Daniel C. Sautter, Catasaqua, Pa., assignor to Pennsylvania Crusher Corporation, Broomall, Pa.

Original No. 4,061,279, dated Dec. 6, 1977, Ser. No. 765,720, Feb. 4, 1977. Continuation of Ser. No. 662,631, Mar. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 501,551, Aug. 29, 1974, abandoned. Application for reissue Aug. 13, 1979, Ser. No. 65,825

Int. Cl.³ B02C *23/00*

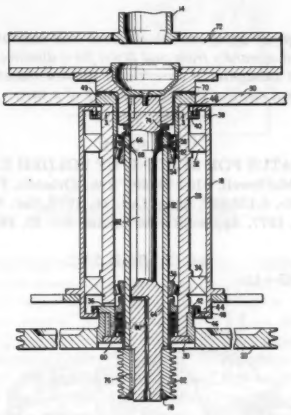
U.S. Cl. 241—86.1 **135 Claims**

1. A drive shafting apparatus suitable for use in [machine including] *a machine having* a high speed rotating impeller or similar element, comprising:

an outer sleeve shaft adapted to be mounted for rotation within said machine;

an inner, cantilever shaft rigidly connected at one end of said cantilever shaft within said outer sleeve shaft and having substantial radial play within said sleeve shaft at the other end of said cantilever shaft, said other end of said cantilever shaft being adapted for connection to said high speed rotating element for rotation therewith; and

damper means situated about said other end of said cantilever shaft for reducing radial [vibrartion] *vibration* of said cantilever shaft as it rotates through critical speeds and for substantially eliminating whirling of said cantilever shaft and high speed rotating element;



said damper means comprising an inner bushing mounted about and spaced from said other end of said cantilever shaft and means for resiliently biasing said spaced bushing to allow limited radial deflection of said cantilever shaft during rotation, said spacing being such that said high speed rotating element rotates about its center of gravity outside of a critical speed without said bushing being engaged and said bushing is engaged and becomes effective during passage of said high speed rotating element through a critical speed.

Re. 30,920
YARN TENSIONING DEVICE AND METHOD

Otto Zollinger, Spartanburg, S.C., assignor to Otto Zollinger, Inc., Spartanburg, S.C.

Original No. 3,753,535, dated Aug. 21, 1973, Ser. No. 297,995, Oct. 16, 1972. Application for reissue Oct. 19, 1978, Ser. No. 952,937

Int. Cl.³ B65H *59/22*

U.S. Cl. 242—152.1 **13 Claims**

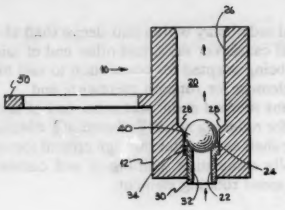
1. A tension device comprising:

a. a housing, said housing having a yarn passageway extending therethrough, said yarn passageway having a large diameter section and a small diameter section;

b. an insert received in said small diameter section of said passageway and having an opening therethrough, said insert defining an uninterrupted seat around said opening in said large diameter section of said passageway to receive a spherical element and hold said spherical element out of contact with walls of said passageway when no yarn is passing therethrough; and

c. a spherical element receivable in said large diameter section of said passageway, said spherical element having a diameter less than the length of said large diameter section of said passageway and said large diameter section of said

passageway having a diameter adjacent said seat to prohibit substantial lateral movement of a spherical element received thereat whereby said spherical element continuously controls tension of a yarn passing thereby[.] *said*



passageway being smooth surfaced and substantially unrestricted upwardly from said insert for a distance sufficient to permit substantially unrestricted upward movement of said spherical element during tensioning of a yarn.

Re. 30,921

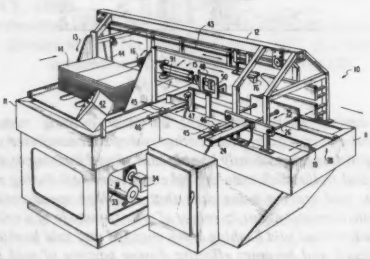
APPARATUS FOR SETTING UP FOLDED CARTONS

James E. McDowell, 3109 Sidney Ave., Orlando, Fla. 32810

Original No. 4,170,929, dated Oct. 16, 1979, Ser. No. 800,007, May 24, 1977. Application for reissue Jul. 10, 1980, Ser. No. 168,362

Int. Cl.³ B31B *5/02*

U.S. Cl. 493—124 **28 Claims**



1. An apparatus for setting up folded cartons, *said cartons each having two major flaps and two minor flaps, and said folded cartons having vertical score lines running parallel to the flute direction of the carton,* comprising in combination:

a frame;

carton conveyor means for conveying set-up cartons thereon; said carton conveyor means being attached to said frame and having a carton discharge at one end of said carton conveyor means;

carton set-up means located at the other end of said conveyor means for setting up a folded carton fed thereto;

said carton set-up means having at least one vacuum cup for grasping folded cartons on each side during set-up of a carton;

folded carton magazine means located to one side of said set-up means for positioning a stack of folded cartons[;], *said magazine means being so positioned that the direction of travel of feed of folded cartons from said magazine means to said set-up means is parallel to the vertical score lines of said folded cartons and is perpendicular to the direction in which set-up cartons are conveyed from said set-up means by said conveyor means;*

folded carton *side* feed means for feeding folded cartons from said folded carton magazine means to said carton set-up means, said feed means having at least one [suction] *vacuum* cup for grasping the bottom carton of a *vertical* stack of *generally horizontally positioned* folded cartons in said magazine and sliding means for sliding said [suction] *vacuum* cup and bottom folded carton from said folded carton magazine means to said carton set-up means, *in a direction of travel of feed of said folded cartons that is parallel to the vertical score lines of said folded cartons and is perpendicular to the direction in which set-up cartons are conveyed from said set-up means by said conveyor means,* and returning to engage the next folded carton in said magazine; and

vacuum pump and vacuum control system for *supplying and* controlling the vacuum on said carton set-up means vacuum cups and said feed means vacuum cup, said [vacuum control system having at least one vacuum switch coupled to each said carton set-up means vacuum cup and to said feed means vacuum cup, said switch switching the vacuum between said carton set-up means and said feed means as said feed feed means delivers a folded carton to said carton set-up means whereby said switch simultaneously switches the vacuum back and forth from said carton set-up means to said feed means vacuum cup] *pump-and-control system having a means for actuating and deactuating said vacuum cups at predetermined points in the carton-erection cycle, said points being so selected that each said feed means vacuum cup is actuated whenever it is sliding from said magazine means to said carton set-up means, and is deactuated whenever said set-up means vacuum cups are grasping said folded cartons on each side during said set-up of a carton.*

Re. 30,922

VINYL END-CAPPED POLYIMIDE OLIGOMERS

William J. Heilman, and Daniel J. Hurley, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

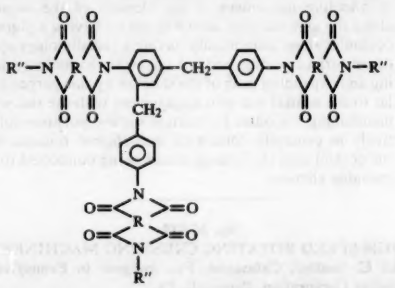
Original No. 4,206,106, dated Jun. 3, 1980, Ser. No. 27,335, Apr. 5, 1979. Application for reissue Aug. 25, 1980, Ser. No. 181,514

Int. Cl.³ C08G *73/10, 73/12*

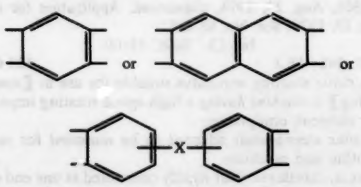
U.S. Cl. 524—104 **17 Claims**

1. A product selected from the group consisting of:

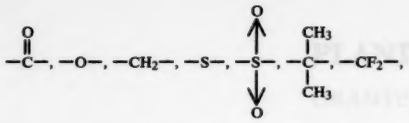
A. An end-capped polyimide oligomer whose principal component has the structure:



where R has the structure:

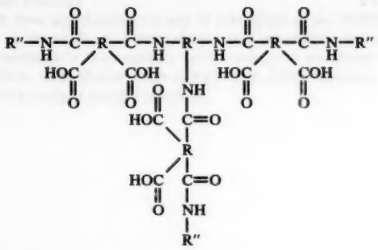


where X is



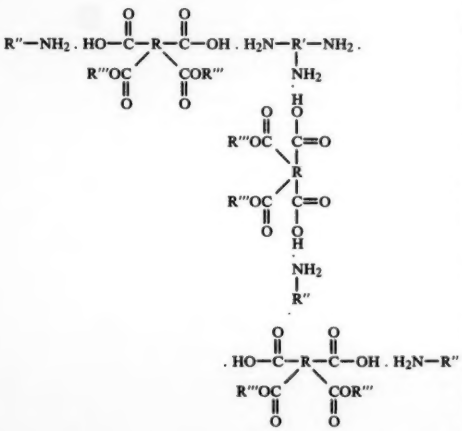
or a bond; where R′ is an aryl group; and where R″ is an aryl group bearing a substituent having the structure:

B. A first precursor of an end-capped polyimide oligomer of (A) whose principal component has the structure:



where R, R′, and R″ are defined as above;

C. A second precursor of an end-capped polyimide oligomer of (A) whose principal component has the structure:



where R, R′, and R″ are as defined above, and where R‴ is the alcohol moiety from which the diester of the aromatic tetracarboxylic acid was prepared.

Re. 30,923

CALCULATOR KEYBOARD SWITCH WITH DISC SPRING CONTACT AND PRINTED CIRCUIT BOARD

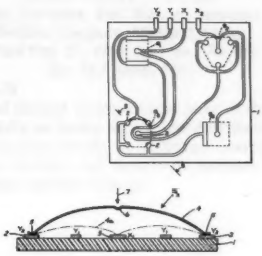
Gilbert H. Durkee, Fort Wayne, Ind.; Per G. Wareberg, Ottawa, Canada, and Alan C. Yoder, Fort Wayne, Ind., assignors to Bowmar Instrument Corporation, Fort Wayne, Ind.

Reissued No. Re. 29,440, dated Oct. 11, 1977, Ser. No. 665,325, Mar. 9, 1976.

Original No. 3,796,843, dated Mar. 12, 1974, Ser. No. 320,147, Jan. 2, 1973. Application for reissue Nov. 13, 1979, Ser. No. 93,686

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—5 A 23 Claims



23. In a keyboard switch assembly including a resilient, conductive switch device manually actuable from a normal to a deflected position, said switch device resiliently returning to its normal position upon removal of force therefrom, **[[***the improvement comprising***]] and** *an insulative member having opposite surfaces, one of said surfaces having first and second elongated conductors thereon, said first conductor including a first switch terminal portion and said second conductor including a second switch terminal portion, said conductors and terminal portions being generally coplanar,* **the improvement wherein** *said switch device* **[[***being***]] is a snap-acting dome** *positioned in facing relationship with said one surface and said conductors, said* **[[***switch device***]] dome** *having a first* **contact area adjacent its periphery and a** *second* **[[***spaced***]]** *contact* **[[***areas***]]area [[***thereon***]] adjacent its center,** *said contact areas being respectively in registry with said terminal portions* **[[***and***]], said first contact area** *engaging* **[[***the same***]] said first terminal portion in both positions of said dome, said second contact area engaging said second terminal portion** *when said* **[[***device***]] dome** *is in said deflected position thereby electrically connecting said terminal portions,* **[[***at least one of***]]** *said* **second** *contact* **[[***areas***]]area** *being spaced from* **[[***the respective***]] said second** *terminal portion in said normal position of said device, said one surface of said member having at least a third conductor thereon intermediate and spaced from said first and second conductors and generally coplanar therewith, said third conductor extending between said* **[[***contact areas***]] terminal portions** *and under said* **[[***device***]] dome** *from a location on said one surface remote therefrom,* **[[***means for maintaining said device in spaced relationship with***]] said first contact area being a projection on said dome adjacent the periphery thereof spacing said dome from** *said third conductor in both positions of said* **[[***device***]] dome** *whereby there is no electrical connection between said third conductor and said* **[[***device***]] dome** *in either position thereof, and means for holding said* **[[***switch device***]] dome** *and insulative member in operative relationship.*

PLANT PATENTS

GRANTED MAY 4, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,843

ROSE PLANT 72-2461

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Sep. 22, 1980, Ser. No. 189,816

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its exhibition style flower form of light red, little fragrance on a vigorous upright hybrid tea plant.

4,844

ROSE PLANT — JP 330

Mathias Tantau, Uetersen, Fed. Rep. of Germany, assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Sep. 25, 1980, Ser. No. 190,908

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its compact plant, bearing red flowers in clusters and having relatively disease resistant foliage.

PATENTS

GRANTED May 4, 1982

ERRATA

For CLASS	See PATENT NO.
372–041	4,327,492
464–075	4,327,562
464–037	4,327,563
374–010	4,327,573
374–045	4,327,585
376–102	4,328,070
376–245	4,328,071
524–505	4,328,133
525–054	4,328,134
525–054	4,328,135
523–204	4,328,136
525–474	4,328,137
525–451	4,328,138
524–495	4,328,139
524–322	4,328,140
524–272	4,328,141
523–417	4,328,142
523–412	4,328,143
523–408	4,328,144
524–006	4,328,145
523–216	4,328,146
524–059	4,328,147
524–555	4,328,148
524–458	4,328,149
523–400	4,328,150
523–205	4,328,151
524–406	4,328,152
548–567	4,328,155
549–396	4,328,156
549–258	4,328,157
549–258	4,328,158
373–118	4,328,386
219–517	4,328,387
373–080	4,328,388
372–098	4,328,467
372–097	4,328,468
372–045	4,328,469
340–146	4,328,541

PATENTS

GRANTED May 5, 1992

ERRATA

PATENTS

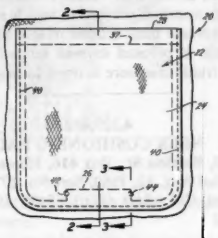
GRANTED MAY 4, 1982

GENERAL AND MECHANICAL

4,327,447
LINED POCKET WITH STITCH-FREE UPPER OUTER PART

Arturo A. Carnaghi, St. Louis, and Howard M. Zins, Manchester, both of Mo., assignors to Angelica Corporation, St. Louis, Mo.

Filed Sep. 12, 1980, Ser. No. 186,737
Int. Cl.³ A41D 27/20
U.S. Cl. 2—247 **12 Claims**



8. A pocket-forming member that is securable to a garment to help form a patch pocket for said garment and that comprises a first piece of material which serves as the outer face of said pocket-forming member, a second piece of material which serves as the lining of said outer face of said pocket-forming member, said first piece of material having the upper portion thereof folded inwardly and downwardly to be adjacent the upper area of the inner surface of said outer face of said pocket-forming member, points of securement that connect the free edge of said inwardly and downwardly folded upper portion of said first piece of material to the upper portion of said second piece of material, and further points of securement that connect portions of the sides and of the bottom of said first piece of material to confronting portions of the sides and of the bottom of said second piece of material, the visible upper portion of said first piece of material being wholly devoid of points of securement, and hence being free of puckering.

4,327,448
DISPOSABLE NON-WOVEN SHORTS

Audrey T. Lunt, 6371 Vermont Hill Rd., South Wales, N.Y. 14139

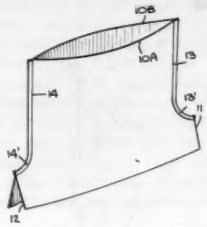
Continuation-in-part of Ser. No. 814,915, Jul. 12, 1977. This application Feb. 19, 1980, Ser. No. 122,187
Int. Cl.³ A41B 9/02
U.S. Cl. 2—404 **5 Claims**

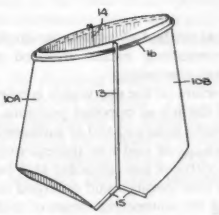
1. A technique for producing shorts comprising the steps of:

A die-cutting flexible sheeting of non-woven thermoplastic fiber material to produce identical blanks of rectangular form, the lower section of the blanks having a pair of oppositely-extending crotch tabs;

B ultrasonically welding two of said blanks in superposed relation along the side margins thereof along side margin welding lines extending from the upper end of the blanks to the upper corner of the related tabs to form a tube; and

C flattening the tube so that the side margin welding lines are coincident with each other and one pair of corresponding tabs is in side-by-side relation and is superposed over the other pair of corresponding tabs; and



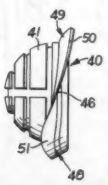


D ultrasonically welding the ends of the superposed tabs together along a line substantially normal to said side margin welding lines to complete the crotch.

4,327,449
ACETABULAR PROSTHESIS

John Charnley, Knutsford, England, assignor to Charnley Surgical Inventions Limited, Knutsford, England

Filed Jun. 26, 1980, Ser. No. 163,311
Claims priority, application United Kingdom, Jul. 10, 1979, 23961/79
Int. Cl.³ A61F 1/03
U.S. Cl. 3—1.912 **9 Claims**



1. An acetabular prosthesis comprising: a body of plastics material defining a blind part-spherical socket surrounded by a rim, and a flange around the body and extending outwardly from the rim, the flange inclining toward the body of the socket over approximately half of the periphery of the rim, the rest of the flange inclining in a direction away from the body of the socket.

4,327,450
METHOD OF INTRAOCULAR IMPLANTING AN ARTIFICIAL LENS

Louis J. Girard, Twelve Oaks Tower, Ste. 500, 4126 Southwest Freeway, Houston, Tex. 77027

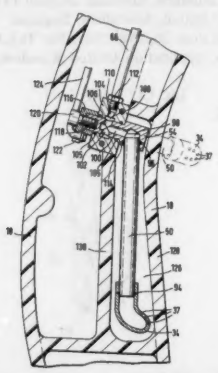
Filed Feb. 9, 1981, Ser. No. 232,656
Int. Cl.[3] A61F 1/16, 1/24
U.S. Cl. 3—13 3 Claims

1. In a surgical method of intraocular implanting an artificial lens having connecting means attached to opposed sides thereof, the steps comprising:
incising the sclera of the eye which is being implanted rearwardly of the iris at opposed positions, with one of said incisions being enlarged and of sufficient length to accommodate passage of said lens therethrough;
excising the vitreous base adjacent said two incisions;
inserting the lens through said enlarged incision;
and attaching the connecting means of said lens to the sclera of the eye at opposed positions to fix said lens in said eye.

4,327,451
WATER-CLOSET OR BIDET

Heinz G. Baus, Ulmenweg 46, Thun, Switzerland

Filed Mar. 17, 1980, Ser. No. 131,011
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2912084
Int. Cl.[3] A61H 35/00; E03D 9/08
U.S. Cl. 4—420.2 5 Claims

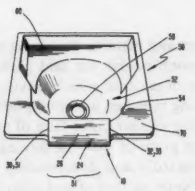


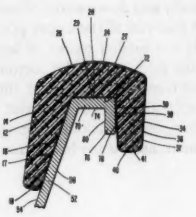
1. Water closet or bidet with a device for washing the lower parts of a users body comprising a spraying device comprising at least one spray nozzle by means of which preheated water may be sprayed on the parts of the body to be cleansed, said spray nozzle being supplied with preheated water through connecting elements comprising a rotatable body rotatably supported in a stationary body; said rotatable body being provided with a blind bore hole and a transverse bore penetrating said blind bore hole, the open end of said blind bore hole communicating with said spray nozzle; said spray nozzle being pivotable between a first position in which the spray nozzle is extended into the bowl of the water closet or bidet and a second position in which said spray nozzle is retracted out of the bowl by means of a piston and cylinder arrangement operatively connected to said rotatable body by means of a rod; said stationary body being provided with an inlet opening and a channel extending from said inlet opening to the region of said transverse bore, whereby preheated water may be supplied to said spray nozzle via said inlet, said channel, said transverse bore and said blind bore hole; said channel overlapping the range of rotation of said transverse bore to such an extent that when said spray nozzle is pivoted to said first position, the full area of the transverse bore is open to said channel, and when the spray nozzle is pivoted to said second position, only a portion of the transverse bore is open to said channel.

4,327,452
NECK CUSHIONING PAD

Lillian Swatzell, Bartlett St., Box 416, Homer, Ak. 99603

Filed Aug. 12, 1980, Ser. No. 177,473
Int. Cl.[3] A54D 44/10, 19/00, 19/08
U.S. Cl. 4—523 11 Claims





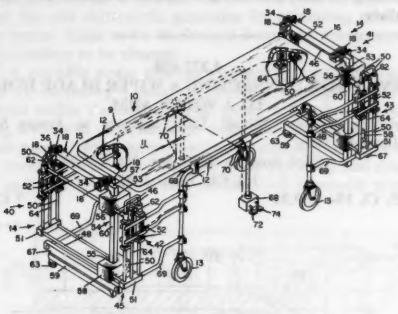
1. A cushion adapted to overlie a portion of a sink, which sink includes a bowl having an inner bowl surface, a substantially horizontal surface connected to and projecting outwardly from a top edge of the bowl, and a downwardly directed surface connected to and depending from said substantially horizontal surface, comprising:
a flexible, resilient cushion having a top surface, said cushion being sufficiently large and being adapted to overlie said portion of said sink, and said cushion including
a first portion adapted to overlie a portion of said bowl surface,
a second portion integrally connected to said first portion and adapted to overlie a portion of said substantially horizontal surface, and
a third portion integrally connected to said second portion and adapted to overlie a portion of said downwardly directed surface;
said first portion and said third portion being resilient and initially inclined toward one another, so that when said cushion is mounted on said sink said first and third portions grip said sink; and
a portion of said top surface of said cushion including a relatively thin layer of silicone.

4,327,453

HOSPITAL PATIENT TRANSFER UNIT

Francis Sefton, 116 Providence Rd., Grafton, Mass. 01519

Filed May 29, 1980, Ser. No. 154,586
Int. Cl.³ A61G *7/10*
U.S. Cl. 5—81 R **11 Claims**



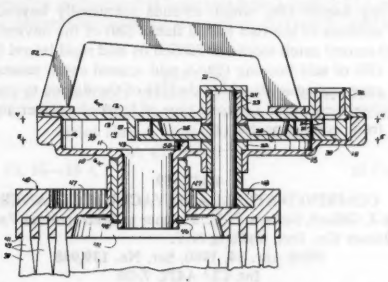
1. Hospital patient transfer unit, comprising:
(a) a wheeled frame,
(b) a generally rectangular table mounted on the frame and having an upper horizontal supporting surface,
(c) an elongated support arm mounted on the frame at each end edge of the table, each arm being mounted for swinging movement about a vertical axis through one end thereof, the axis being movable along the end edge of the table, the arm also being movable vertically from a first position on a level with the supporting surface to a second position substantially above the supporting surface, and
(d) a pair of sheet-clamping bars removably mounted on the arms and extending between them parallel to the side edges of the table.

4,327,454

WATER-POWERED BRUSH WITH GEAR DRIVE

Bertie Spence, Moscow, Id., assignor to Water Front Products, Inc,, Spokane, Wash.

Filed Feb. 19, 1980, Ser. No. 122,032
Int. Cl.³ A46B *13/06;* B08B *1/04;* B60S *3/06*
U.S. Cl. 15—29 **4 Claims**



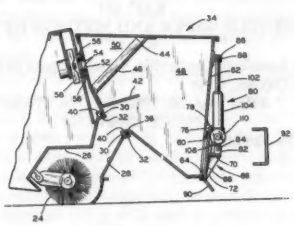
1. In a water-powered brush assembly:
a sealed enclosure having first and second parallel walls spaced from one another;
a shaft having a center shaft axis;
coaxial bearing means on said first and second walls journalling said shaft for rotational movement about the shaft axis relative to the enclosure;
said shaft having one end protruding axially outward beyond the first wall of said enclosure;
a bladed wheel having a center wheel axis;
said wheel being located within said enclosure and being fixed coaxially to said shaft for conjoint rotation with the shaft;
water inlet means in said enclosure for directing water under pressure to the bladed wheel for rotating the wheel relative to the enclosure about its axis;
a brush rotatably mounted to the exterior of the first wall of said enclosure about a brush axis parallel to and spaced from the shaft axis, said brush having an aperture formed therethrough centered along the brush axis;
meshing gear means on said brush and the outer end of said shaft for transmitting rotational movement between them;
the interior of the sealed enclosure being defined by a continuous side wall extending between said first and second walls, said side wall having opposed inner end surfaces;
the axial thickness of the bladed wheel being less than the separation between the first and second walls within the enclosure;
the periphery of the bladed wheel being located within the enclosure in close proximity to one inner end surface of said side wall and is spaced radially inward from the remaining inner end surface;
water outlet means in the form of an opening through the first wall of the enclosure coaxial with said brush axis for directing water from within the enclosure through the brush aperture;
deflector means for directing water from said remaining inner end surface to said opening;
and guard means overlapping an adjacent portion of the wheel periphery facing the remaining inner end surface of the enclosure for preventing water from reentering the bladed wheel periphery from said remaining inner end surface.

4,327,455

SURFACE CLEANING MACHINE WITH HOPPER DUMPING MECHANISM

Jack L. Burgoon, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Dec. 4, 1980, Ser. No. 212,836
Int. Cl.³ F01H *1/04*
U.S. Cl. 15—83 **14 Claims**



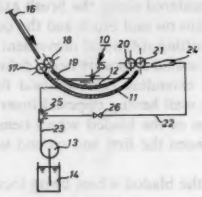
1. A surface cleaning machine comprising a frame, a hopper having an outlet opening, means pivotally supporting said hopper on said frame for pivotal movement about a horizontal axis, a door, means pivotally connecting said door to said hopper, said door closing off said outlet opening when in a closed position, said machine having stop means engageable with said door when said door is pivotally moved away from said opening, drive means having one portion connected to said machine and another portion connected to said door to open said door when said drive means is actuated, said door being positioned so that when said door engages said stop means, continued actuation of said drive means causes said hopper to pivot about said pivotal supporting means toward a dumping position.

4,327,456

APPARATUS FOR APPLYING A PROCESSING LIQUID TO A SHEET OR WEB MATERIAL

Hugh F. Deconinck, Deurne-Zuid, Belgium, assignor to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Sep. 11, 1980, Ser. No. 186,387
Claims priority, application United Kingdom, Sep. 13, 1979, 31773/79
Int. Cl.³ G03D 5/06, 3/13
U.S. Cl. 15—102 3 Claims



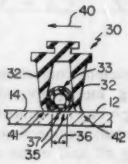
1. Processing apparatus for use in the controlled application of a processing liquid to sheet or web material, said apparatus comprising at least one container for holding a bath of processing liquid, means for feeding a said material along a path passing through the bath in said container, means comprising a pair of exit rollers located for receiving such material from an exit region of the container and for squeezing surplus liquid from such material emerging from the bath, and applicator means associated with one of said exit rollers for applying separate liquid to the roller periphery to wet the same, said applicator means comprising a supply manifold for said separate liquid extending generally parallel to the axis of the roller to be wetted over the length of the roller to be wetted, said manifold having an elongated narrow liquid metering slot along the side thereof toward said roller, an applicator blade of resilient flexible material affixed at one end to said manifold below said slot and bearing at its opposite free end against the surface of said roller to be wetted at a point on the periphery thereof proximate to its lowest region with a downward inclination from its affixed end to its free end, whereby said separate liquid cascades from said metering slot over the blade length and collects as a bead in the convergence of the blade end and said roller periphery.

4,327,457

WINDSHIELD WIPER AND METHOD OF MAKING SAME

Bobby R. Lunsford, Centerville, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Aug. 20, 1980, Ser. No. 179,857
Int. Cl.³ B60S 1/38
U.S. Cl. 15—250.03 16 Claims



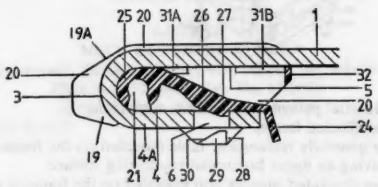
1. In a device for cleaning a window surface wherein said device comprises a longitudinal axis and a pair of wiping members dispaced in spaced apart relation parallel to said axis, the improvement comprising a right circular cylindrical cleaning member dispaced between and fixed to said wiping members and having a polymeric core and a fabric-like material with fabric members disposed in a predetermined pattern and defining spaced openings therein, wherein said cleaning member comprises a substantially semicylindrical portion which is adapted to engage said window surface midway between said wiping members during cleaning movements of said device in either of apposed directions roughly perpendicular to its longitudinal axis, said semicylindrical portion being made of yieldable resilient material and providing a substantially rectangular cleaning surface upon being compressed against said window surface.

4,327,458

DEVICE FOR CONNECTING A WIPER BLADE HOLDER TO A WIPER ARM

Guiseppe Maiocco, Rivoli, Italy, assignor to Arman S.p.A., Druento, Italy

Filed Aug. 11, 1980, Ser. No. 176,966
Int. Cl.³ B60S 1/40
U.S. Cl. 15—250.32 7 Claims



1. A connector (19) for attaching a wiper blade (13) to two different hook-slot wiper arms (1, 2), comprising a housing (19A) having two lateral flanks (20), a body (25) extending between said flanks (20), said body (25) having an opening (23) for snap-fitting onto a rivet (15) of a wiper blade holder, characterized by,

(a) a flexible release lever (26) carried by said body (25) and extending obliquely downwards therefrom, a catch means (27) on said release lever (26), said catch means (27) cooperating with said body (25) of the device to prevent displacement of a first type of hook-slot wiper arm (1) from said connector (19), said first catch means (27) is located on the downwardly facing surface of said release lever (26), said first catch means (27) comprising a depending catch (27) which enters into a rectangular opening (6) provided in the curved part of the first type of hook-slot arm (1), said release lever (26) is provided with an actuating handle (24) which extends rearwardly beyond the confines of the two lateral flanks (20) of the device, and

(b) second catch means 29 carried by said rigid lateral flanks (20) of said housing (19A), said second catch means (29) cooperating with said body (25) of the device to prevent displacement of a second type of hook-slot wiper arm (2) from said connector (19).

4,327,459

COMBINED STEAM AND VACUUM CLEANER

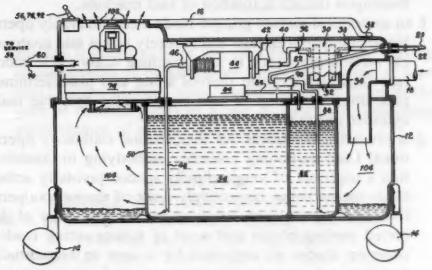
Jack J. Gilbert, Suffern, N.Y., assignor to Metropolitan Vacuum Cleaner Co., Inc., Suffern, N.Y.

Filed Apr. 14, 1980, Ser. No. 139,948
Int. Cl.³ A47L 7/00
U.S. Cl. 15—321 13 Claims

11. A portable steam cleaning machine comprising, in combination, a casing, a plurality of casters attached to said casing for ready movement thereof, an electrolytic generator for generating steam consisting of a pair of spaced carbon rods, a sealed receptacle mounted within said casing for containing said carbon rods, a positive displacement pump mounted within said casing adjacent to said receptacle, a tank mounted within said casing for holding a liquid solution consisting mainly of water and a small amount of ammonium nitrate,

tubular means for connecting said positive displacement pump to said tank and to one side of said receptacle, tubular nozzle means having one end connected to another side of said receptacle, and electrical means for energizing said carbon rods and said positive displacement pump, whereby liquid from said tank is fed by said positive displacement pump into said receptacle to contact both of said carbon rods and close an electrical circuit for said electrolytic generator for producing substantially instant steam to be discharged from said nozzle means upon a surface to be cleaned.

12. A portable steam cleaning machine in accordance with claim **11**, including a tank containing a detergent solution mounted within the casing, an air pump mounted within said casing, a solenoid valve mounted within said casing adjacent to said air pump, tubular means interconnecting said air pump and said detergent tank, tubular means interconnecting said detergent tank and one side of said solenoid valve, tubular means



interconnecting another side of said solenoid valve and said nozzle means, and a second electrical means for energizing said air pump and said solenoid valve, whereby atmospheric air is pumped into said detergent tank by said air pump to force detergent solution from said detergent tank through said energized solenoid valve and discharged from said nozzle means in conjunction with said steam discharge.

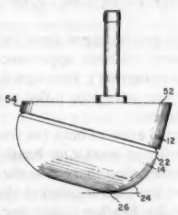
13. A portable steam cleaning machine in accordance with claim **12**, including a vacuum motor mounted within said casing, a suction tank mounted within said casing contiguous to said vacuum motor, a hose having one end disposed within said suction tank and having its other end included as part of said nozzle means, and a third electrical means for energizing said vacuum motor, whereby suction produced by said vacuum motor renders the nozzle means effective to pick up soil loosened by said steam and detergent from a surface of a carpet being cleaned and deposited into said suction tank by said hose.

4,327,460

CASTER ASSEMBLY WITH VARIABLE PITCH BEARING

John G. Wolff, 42 Taunton Rds, Toronto, Canada (M4S 2P1)

Filed Nov. 4, 1980, Ser. No. 203,954
Int. Cl.³ B60B *33/00*
U.S. Cl. 16—18 A **10 Claims**



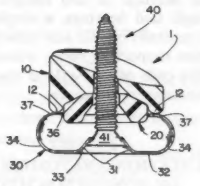
1. A caster assembly comprising the combination of a bearing block, a track member mounted for rotation on said bearing block about an inclined axis extending downwardly at an angle 'a' in the range of 10° to 35° from a vertical direction, said track member including a cupped outer surface adapted for contacting the floor or other surface for movement thereon, means forming an annular cavity in said track member opening outwardly in the end opposite said cupped outer surface and disposed to lie in a plane perpendicular to said axis and concentrically therewith, means forming a corresponding circular cavity opening outwardly in one end of said bearing block, said two cavities being combined in a cooperating configuration to form two parts of an annular chamber, in which said circular cavity is a stationary element, and in which said annular cavity is a moveable element, said annular chamber containing a circular row of spherical balls in frictional contact with said elements.

4,327,461

FURNITURE GLIDE AND FURNITURE

Joseph M. Wisniewski, Marne, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Jun. 11, 1979, Ser. No. 47,096
Int. Cl.³ A47B *91/06*
U.S. Cl. 16—42 R **32 Claims**



1. A furniture glide for an article of furniture, comprising:

a first glide member made of a hard, rigid structural material capable of supporting an article of furniture on a floor surface in various use modes, including sliding over the floor surface without significant deformation; said first glide member including a downwardly opening cavity therein, and a downwardly facing shoulder adapted for abutment with the floor surface; said shoulder having a radiused bottom, whereby said first glide member will not dig into the floor surface, and can function as a glide in and of itself;

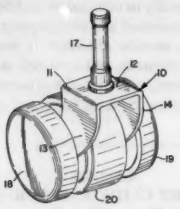
a second glide member shaped to be abuttingly seated within said cavity and having a bottom projecting a short distance below the bottom of said shoulder of said first glide member at least when said furniture glide is unweighted; said second glide member having a downwardly extending aperture therethrough to facilitate fastening to the furniture article, and being made of a relatively soft, high friction material which will tend to prevent an article of furniture employing said glide from sliding over the floor surface on which it is supported; and

fastener means for selectively connecting said first and second glide members both to the article of furniture and to each other; said fastener means being adapted to extend through said second glide member aperture, and comprising a head shaped for a recessed fit therein, and a shank with means for detachably connecting said glide with the article of furniture, whereby said glide has a non-sliding use mode wherein said first and second glide membes are matingly interconnected and attached to the furniture article by said fastener means, and a sliding use mode wherein said second glide member is detached from said first glide member, and said first glide member is connected directly to the furniture article by said fastener means.

4,327,462
MULTI-WHEEL BED ROLLER

David O. Eggleston, Mishawaka, Ind., assignor to Shepherd Products U.S. Inc., St. Joseph, Mich.

Filed Oct. 6, 1980, Ser. No. 194,378
Int. Cl.[3] A47B *91/00*
U.S. Cl. 16—47 3 Claims

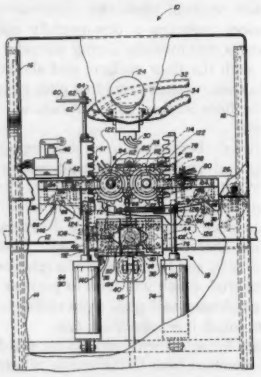


1. A multi-wheel bed roller comprising an inverted U-shaped swivel mounted horn frame including spaced apart side flanges depending from a horizontal top web plate, a swivel mounting stem extending upwardly from the web plate, horizontally aligned bearings in said flanges, a horizontal axle extending through said bearings, a single supporting roller wheel mounted centrally on said axle between said flanges, and a pair of separate supporting roller wheels mounted respectively at opposite ends of said axle at the respectively outer sides of said respective side flanges.

4,327,463
SINGLE STATION ANATOMICAL SECTION DE-BONING MACHINE

Eugene G. Martin, New Holland, Pa., assignor to Victor F. Weaver, Inc., New Holland, Pa.

Filed Oct. 10, 1980, Ser. No. 196,139
Int. Cl.[3] A22C *21/00*
U.S. Cl. 17—11 14 Claims



1. A single station anatomical section de-boning machine for receiving successively by manually oriented insertion thereto anatomical sections for initiating a machine activation into an automatic high-speed de-boning cycle sequence to deliver respectively therefrom a separated substantially bone fragment free anatomical section meat component and an anatomical section elongated bone component, said machine comprising in combination:

a. a longitudinally disposed support frame structure having interconnected horizontal and vertical members,

b. a machine integrated electrical and pneumatic circuit system operational through a machine emergency ON/-OFF-RESET safety switch means,

c. additionally a machine electrical interlock safety switch means,

d. a machine forward infeed end and a machine rearward delivery end respectively positioned at the opposite longitudinally disposed ends of said machine and therebetween provided with a double-acting main cylinder piston drive means reciprocally operable along a predetermined path coincidental with the centrally intermediate longitudinal axis disposition of said machine extensively toward the rearward delivery end thereof in a machine draw cycle mode and retractably toward the forward infeed end thereof,

e. a machine plunger trigger means depressively operable upon a manually oriented insertion thereagainst of an anatomical section for de-boning processing operations to thereupon initiate activation of said machine,

f. an anatomical section gripper blade means movably operable to clampably engage and securely retain said anatomical section prepatory to said machine draw cycle mode rearward displacement thereof along said predetermined path upon extension of said reciprocally operable main cylinder piston drive means,

g. a pivotally functional but longitudinal stationary operational head de-boning assembly embodying in combination a triple set of longitudinally spaced pivotally acting blade means being respectively a set of shaped cooperative meat cutting and stripping blades plus a set of detented peeling blades and a set of scissor-acting tendon severing blades all activated by a cam to sequentially function in pivotal closable engagement of said anatomical section meat component on alignment of said centrally intermediate longitudinal axis disposition of said machine contemporaneously during rearward machine draw cycle mode displacement of said gripper blade means clampably engaged and securely retained anatomical section therealong and therethrough to effect a peelable removal and separation of said anatomical section meat component from said anatomical section elongated bone component of said anatomical section and thereafter a first and a second release means to operationally effect respective releases thereof,

h. a machine recycle means functional to automatically effect reciprocating retraction of said double-acting main cylinder piston drive means toward the forward end of said machine, and

i. a machine reset means to functionally posture said machine automatically for continued successive manually initiated de-boning operation utilization thereof.

4,327,464
PROCESS OF PRODUCING SIMULATED "BERBER" YARN

William F. Hutcheson, Lookout Mountain, Tenn., assignor to Rossville Yarn Processing Company, Rossville, Ga.

Filed May 21, 1979, Ser. No. 41,183
Int. Cl.[3] B41F *17/38;* D02G *1/00;* D04B *19/00*
U.S. Cl. 28—218 11 Claims

1. A process for producing a yarn having an appearance simulating the natural aesthetic appearance of "Berber" wool yarns, said process comprising the steps of:

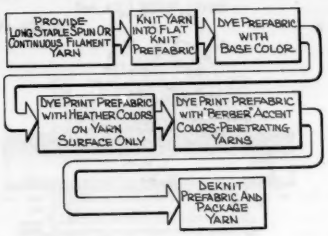
forming at least one yarn into a flat prefabric having front and back surfaces;

applying to selected areas of both the front and back surfaces of the prefabric, at least one heather color dye while limiting the penetration thereof to the surface area only of the portions of the yarn located at the surface of the prefabric so that the heather color dye does not penetrate through the yarn but forms random size heather colors of varying lengths on various surface portions of the yarn;

applying to selected areas of at least one surface of the prefabric, at least one accent color dye while causing penetra-

tion thereof through the yarn to form short areas of the accent color at random locations along the yarn; and

raveling the prefabric to thus obtain a yarn therefrom having a simulated "Berber" yarn appearance characterized by having random size heather colors of varying lengths on surface portions only of the yarn for simulating varying staple lengths of natural wool fibers and having at least one "Berber" accent color which penetrates through the yarn at random locations along its length for simulating short clumps of natural wool fibers.

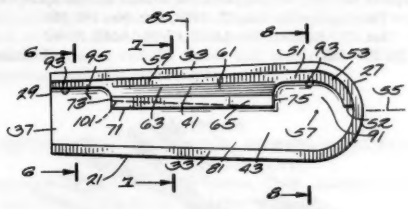

PROVIDE LONG STAPLE SPUN OR CONTINUOUS FILAMENT YARN
KNIT YARN INTO FLAT KNIT PREFABRIC
DYE PREFABRIC WITH BASE COLOR
DYE PRINT PREFABRIC WITH HEATHER COLORS ON YARN SURFACE ONLY
DYE PRINT PREFABRIC WITH "BERBER" ACCENT COLORS-PENETRATING YARNS
DEKNIT PREFABRIC AND PACKAGE YARN

4,327,465

HANDLE FOR TOOL HAVING A TANG

Fred A. Moritsch, 171 Las Flores, Nipomo, Calif. 93444

Filed Sep. 24, 1980, Ser. No. 190,333
Int. Cl.³ B23D *71/04*; B25G *1/00*; B23B *5/22*
U.S. Cl. 29—80 **19 Claims**



1. A handle for a tool having a shank, said handle comprising identical first and second half sections in mating engagement, said first and second half sections each including cooperating wall means defining a socket for receiving the shank and, when the shank is received in said socket, for preventing relative movement between said half sections in each of three planes mutually perpendicular to each other.

4,327,466

CONDITIONING MACHINE FOR BRUSHING END FACE OF METAL MATERIAL

Yoshitsugu Yanagida, Aichi; Mitsuo Higuchi, Yokosukamachi; Yoshiaki Ito, Aichi; Shigeru Nakaii, and Syogo Ehiro, both of Okayama, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo and Aichi Steel Works, Limited, Aichi, both of, Japan

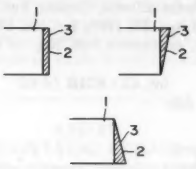
Filed Apr. 3, 1980, Ser. No. 136,915
Claims priority, application Japan, Sep. 7, 1979, 54-115010
Int. Cl.³ B21C *37/30*; B24B *7/00*; A47L *15/00*
U.S. Cl. 29—90 R **6 Claims**

1. A conditioning machine for brushing an end face of a metal material comprising:

a brushing mechanism having a brushing tool for brushing an end face of a metal material to be brushed;

an angle detecting mechanism having a side surface in parallel to a brushing surface of the brushing tool of said brushing mechanism, provided in such a manner as to be movable into and out of a space formed between the end face of a metal material to be brushed and the brushing surface of the brushing mechanism, and being capable of abutting against the end face of a metal material to be brushed to detect an inclination of the end face to be brushed;

a frame mechanism having rested thereon said brushing mechanism and said angle detecting mechanism, being swingable or fixable with respect to a base; and



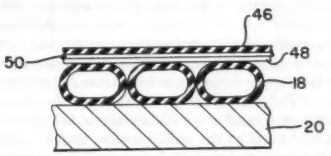
a copying mechanism for causing said frame mechanism to follow the inclination of the end face to be brushed and be swinged, when said angle detecting mechanism abuts against the end face to be brushed, whereby the brushing surface of the brushing tool of the brushing mechanism is brought into parallel to the end face of a metal material to be brushed.

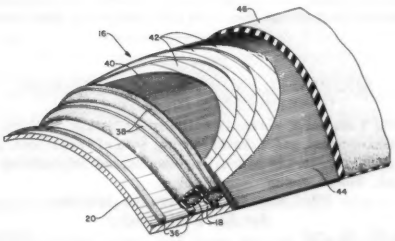
4,327,467

INFLATED SHELL STRUCTURE FOR CURING OR EMBOSSING ROLLER

Glenn W. Quaint, Cuyahoga Falls, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed May 27, 1980, Ser. No. 153,349
Int. Cl.³ B21B *13/02*
U.S. Cl. 29—113 R **11 Claims**





1. An industrial roller assembly, comprising:

a mandrel;

a flexible tube spirally wound about said mandrel;

inflation means operatively connected to said tube for inflating and maintaining said tube under pressure;

a rubber cover positioned over and in compressive contacting engagement with said tube; and

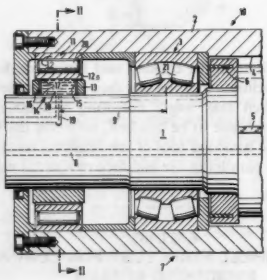
further including a first force-absorbing material axially wrapped about said mandrel and a second force-absorbing material circumferentially wrapped about said mandrel,

said first material comprising first and second layers of wire and said second material comprising a cloth, said cloth being interposed between said first and second layers.

4,327,468
CONTROLLED DEFLECTION ROLL

Eduard Küsters, Gustav-Fünders-Web 18, 4150 Krefeld, and Karl-Heinz Ahrweiler, Krefeld, both of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 141,808
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003396
Int. Cl.³ B21B *13/02*
U.S. Cl. 29—116 AD **6 Claims**



1. A controlled deflection roll comprising a rotative cylindrical shell having an outside adapted to form a pressure rolling nip with a counter roll, a non-rotative shaft extending axially through and radially spaced from the shell's inside and having ends extending beyond the roll's ends and adapted to receive force exerted in the direction of said nip, self-aligning bearings axially spaced inwardly from the shell's ends and positioned inside of the shell and journaling the shell on the shaft so as to prevent relative radial movement between the shell and shaft at the bearings, a first means for applying in said direction of the nip uniformly throughout the shell's length between the axial insides of said bearings a first force transmitted from said shaft to the shell's inside, and a second means disposed between said shaft and said shell in the area between said shell's ends and the axial outsides of said bearings for applying, in a direction in line with said nip, at positions inside of the shell and spaced from the axial outsides of said bearings, a second force transmitted from said shaft to the shell's inside.

4,327,469
METHOD FOR MOUNTING RING-SHAPED CONSTRUCTION ON SHIP STERN

Koichi Yamanaka, Wakayama; Ryuzo Yamasaki, Yachiyo; Yoshiharu Sakai, and Takashi Hirono, both of Wakayama, all of Japan, assignors to Mitsui Engineering and Shipbuilding Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,964
Int. Cl.³ B23Q *3/00*
U.S. Cl. 29—407 **7 Claims**

1. A method for mounting a ring shaped member on the stern of a ship, said method comprising:

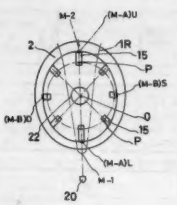
(a) fixing a plurality of alignment pieces at predeterminted positions on a peripheral surface of said ring shaped member;

(b) marking a point on each of said alignment pieces, each point being equidistant from the center of said ring shaped member;

(c) marking lines on said ship's stern indicating the position where said ring shaped member is to be mounted;

(d) provisionally positioning said ring shaped member on said ship's stern with said ring shaped member being aligned with said marking lines thereon;

(e) projecting a circular path centered on the axis of rotation of the propeller of said ship;



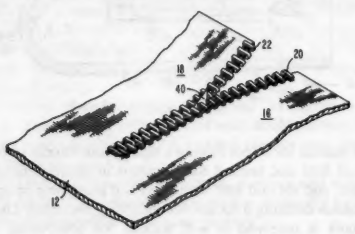
(f) aligning said points on said alignment pieces with said projected circular path; and

(g) fixing said ring shaped member to said stern.

4,327,470
METHOD OF MAKING A SLIDE FASTENER INSTALLATION

Charles T. Lawrence, Saegertown, Pa., assignor to Talon, Inc., Meadville, Pa.

Division of Ser. No. 737,161, Oct. 29, 1976, Pat. No. 4,254,538. This application Jul. 17, 1980, Ser. No. 169,556
Int. Cl.³ B29D *5/00;* **A41H** *37/06;* **A44B** *19/42*
U.S. Cl. 29—408 **7 Claims**



1. A method of making a slide fastener installation comprising the steps of

forming an interlocked pair of trains of slide fastener elements,

bonding one side of leg portions of the interlocked pair of trains of slide fastener elements to one side of a single unitary sheet of fabric,

cutting the fabric along a line extending centrally along the bonded trains of slide fastener elements beginning at one end of the trains of interlocked slide fastener elements and terminating at a point spaced from the opposite end of the trains of slide fastener elements to form a slit in the sheet of fabric between upper portions of the trains of slide fastener elements and to define a lower portion of the pairs of trains of slide fastener elements which are interlocked with each other and which are bonded to an uncut portion of the sheet of fabric to form an end stop for the slider, and

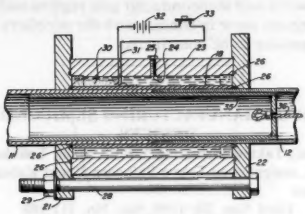
entraining a slider on the trains of slide fastener elements to slidably move thereon to engage and disengage the coupling elements thereof.

4,327,471

HYDROSTATIC PIPE SPLICING METHOD

Hugh E. Whitted, III, East Bend, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 24,761, Mar. 28, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,295
Int. Cl.³ B23P 17/00
U.S. Cl. 29—421 R 6 Claims



1. A method of splicing pipe by sealing a sleeve over the ends of adjacent pipe lengths comprising, in combination, the steps of slipping a closely fitted sleeve over the ends of adjacent pipe lengths, completely confining an annular body of liquid about said sleeve with a rigid structure, and firing a charge of propellant in said body of liquid so as to radially shrink said sleeve into sealing engagement with said pipe lengths.

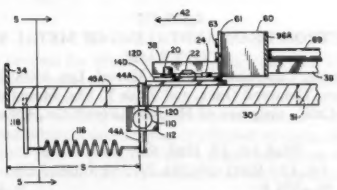
4. A method of splicing pipe by sealing a sleeve over the ends of adjacent pipe lengths comprising, in combination, the steps of slipping a closely fitted sleeve over the ends of adjacent pipe lengths, completely confining an annular body of a substantially incompressible medium about said sleeve with a rigid structure, and firing a charge of propellant in said rigid structure so as to radially shrink said sleeve into sealing engagement with said pipe lengths.

4,327,472

METHOD FOR SEPARATING HYBRID SUBSTRATE FROM CARRIER PLATE

Andrzej J. Krzeptowski, San Carlos, Calif., assignor to GTE Automatic Laboratories, Inc., Northlake, Ill.

Filed Mar. 11, 1980, Ser. No. 129,508
Int. Cl.³ B23P 19/00
U.S. Cl. 29—426.5 2 Claims



1. The method of separating a leaded hybrid substrate from a heat conductive carrier plate that it is resting on, the substrate having a flat bottom that is contiguous with and stuck to a flat top of the plate by semi-liquid solder flux following a reflow solder operation, comprising the steps of:

creating a first force in a first direction in a first plane that is parallel to a reference plane containing the flat bottom of the plate, the first plane being positioned above the reference plane and the plate so that the first force is applied to a non-leaded first edge of the substrate sitting on the plate and having leads on a side thereof adjacent the first edge;

creating a second force in a second direction that is opposite to the first direction in a second plane that is also parallel to the reference plane, the second plane being positioned above the reference plane so that the second force is applied to an edge of the plate which has a flat bottom in the reference plane, said plate edge being adjacent a leaded edge of the substrate;

causing a shear force to be created along the stuck-together surfaces of the stacked plate and substrate by the first and second forces to be a prescribed level that is generally sufficient for separating the substrate from the plate and

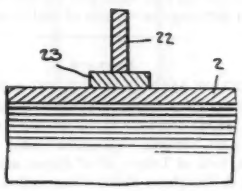
comprising the additional step of releasing the second force when it exceeds the prescribed value so as to pass one of a substrate stacked on a plate and a separated substrate that is no longer associated with a plate without damaging components soldered to the broad top surface of the substrate.

4,327,473

METHOD OF APPLYING A CRACK ARRESTOR

Francis S. Somerville, Calgary, Canada, assignor to Northern Border Pipeline Company, Kansas City, Mo.

Division of Ser. No. 733,882, Oct. 19, 1976, Pat. No. 4,148,127. This application Jan. 19, 1979, Ser. No. 4,884
Claims priority, application Canada, Oct. 20, 1975, 238126
Int. Cl.³ B23P 11/02
U.S. Cl. 29—447 1 Claim



1. A method of applying a band-type crack arrestor to a pipe section comprising:

(a) placing corrosion resistant material in a location adapted to contact the outer diameter of said pipe section at the location said arrestor will occupy along the pipe length;

(b) heating said arrestor to cause expansion of the inner diameter of said arrestor to a value larger than the outer diameter of said pipe section sufficient to enable said arrestor to be placed over the outer surface of said pipe section and a portion of said corrosion resistant material;

(c) placing said arrestor over the outer surface of said pipe section and a portion of said corrosion resistant material;

(d) allowing said arrestor to cool until the inner diameter of said arrestor engages the outer diameter of said pipe section and the portion of said corrosion resistant material in a tight fit wherein the said portion of said corrosion resistant material is compressed between said arrestor and said pipe section while said arrestor is in the position it will occupy along the pipe length.

4,327,474

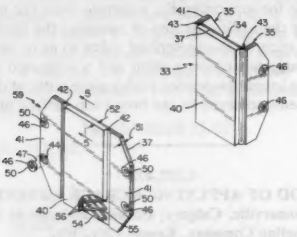
METHOD OF MAKING PEDESTAL LINER FOR A RAILWAY VEHICLE

Homer N. Holden, Sylva, and Reese Sumrall, Maggie Valley, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 30,035, Apr. 13, 1979, Pat. No. 4,237,793. This application Jul. 31, 1980, Ser. No. 174,087
Int. Cl.³ B51D 53/10; B23P 3/00, 19/04; B21D 35/00
U.S. Cl. 29—149.5 NM 9 Claims

1. In a method of making a U-shaped pedestal liner for a railway vehicle comprising forming a bight and a pair of parallel legs extending from opposite ends of said bight wherein said parallel legs consist of a single thickness of material the improvement comprising making said legs and bight of a plurality of thicknesses comprising the steps of, providing a planar

continuous uninterrupted sheet of metal backing which is adapted material to define said bight and parallel legs, fixing antifriction material to a central portion of said backing material to define said bight, fixing antifriction material on each side of said central portion of said planar sheet of backing material



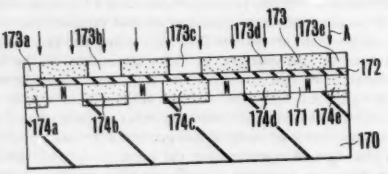
adapted to define said parallel legs, said backing material providing optimum structural support for said antifriction material and then bending the planar sheet of backing material with the antifriction material fixed thereto to define said U-shaped pedestal liner having said bight and parallel legs, said antifriction material defining the surface of said U-shaped liner.

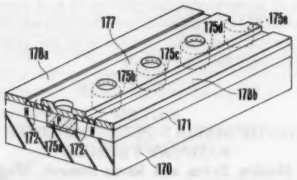
4,327,475

METHOD OF MANUFACTURING A FET DEVICE DISPOSED IN A COMPOUND S/C LAYER ON A SEMI-INSULATING SUBSTRATE

Kazuyoshi Asai, Iruma; Yasunobu Ishii, and Katsuhiko Kurumada, both of Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jun. 23, 1980, Ser. No. 161,781
Claims priority, application Japan, Nov. 26, 1979, 53/153450
Int. Cl.³ H01L *21/26, 29/78, 29/205, 27/14*
U.S. Cl. 29—571 **6 Claims**





1. A method of manufacturing a field effect transistor comprising the steps of

a first step of forming a semiinsulating layer made of a compound semiconductor and a compound semiconductor layer which is disposed on said semiinsulating layer;

a second step of implanting ions of an impurity from the main surface of said compound semiconductor layer to form at least two semiconductor gate regions which extend from the main surface to substantially reach said semiinsulating layer and are disposed with a predetermined interval, said impurity being different from the first conductivity type; and

a third step of sintering metallic layers on the semiconductor gate region in ohmic contact and on opposite sides of the semiconductor layers with said semiconductor gate regions being interposed therebetween to form a gate, a source and a drain electrodes;

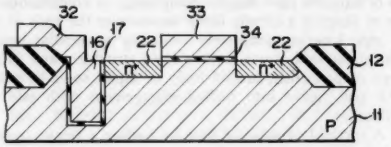
said second step further comprising a step of positioning at least two of said semiconductor gate regions such that said gate regions come in contact with the periphery region of the transistor to be constructed.

4,327,476

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Hiroshi Iwai, Takaidonishi, and Yoshio Nishi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 28, 1980, Ser. No. 211,188
Claims priority, application Japan, Dec. 7, 1979, 54/158978
Int. Cl.³ H01L *21/28, 21/302*
U.S. Cl. 29—571 **11 Claims**



1. A method of manufacturing semiconductor devices comprising the steps of:

forming at least one groove at a given location of a semiconductor substrate;

laying an insulating film over the entire surface of said semiconductor substrate including said groove;

depositing conductive material on said insulating layer to a thickness greater than half the width of an opening of said groove; and

forming a MOS capacitor electrode of the conductor layer residual in said groove by etching said deposited conductor layer until the insulating film other than its portion within said groove is exposed.

4,327,477

ELECTRON BEAM ANNEALING OF METAL STEP COVERAGE

Giora Yaron, Cupertino; Eliyahou Harari, Los Altos; LaVerne D. Hess, Thousand Oaks, and Yueh Y. Ma, Mountain View, all of Calif., assignors to Hughes Aircraft Co., Culver City, Calif.

Filed Jul. 17, 1980, Ser. No. 169,559
Int. Cl.³ H01L *21/263, 21/268;* **B05D** *3/06*
U.S. Cl. 29—576 B **4 Claims**

1. A method for making a metal oxide semiconductor silicon-on-sapphire device, comprising the steps of:

(a) defining silicon islands over a sapphire substrate;

(b) forming source and drain pairs in each of said silicon islands;

(c) forming a dielectric gate oxide layer covering the channel region between each of said source and drain pairs;

(d) forming polysilicon gates overlying the channel region between each of said source and drain pairs;

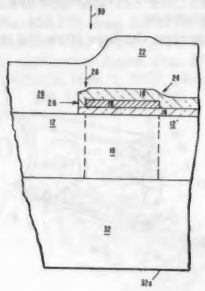
(e) forming an overlying dielectric film;

(f) opening contact holes to the polysilicon electrodes and other contact holes to the source and drain pairs;

(g) evaporating an aluminum layer over the entire device;

(h) exposing the aluminum layer to a pulsed electron beam using an electron beam apparatus controlled by an internal

discharge capacitor, the electron beam having a pulse duration on the order of 20 nanoseconds, a beam diameter on the order of 1 ½ inches and wherein the discharge



capacitor of the electron beam apparatus is initially charged to approximately 190 kilovolts; and,

(i) photolithographically defining conductor lines in the aluminum layer.

4,327,478

PROCESS FOR FORMING THE WINDING CORES OF STATORS OR ROTORS OF ELECTRIC MACHINES

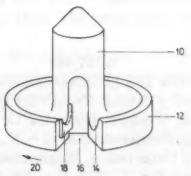
Josef Müller, Frankfurt am Main, Fed. Rep. of Germany, assignor to Balzer & Droll, Niederdorfelden, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,305

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827139

Int. Cl.³ H02K *15/08*

U.S. Cl. 29—596 **7 Claims**



1. In a process for shaping the winding head of a stator or rotor of an electrical machine, the improvement wherein shaping forces are applied to the winding head to provide shaping thereof and the winding head is laced simultaneously with said shaping and wherein said shaping is effected by using the same forming tool part to progressively contact and shape discrete areas of the winding head in sequence around the circumference thereof.

4,327,479

METHOD FOR ASSEMBLING A STATOR FOR AN ELECTRIC MACHINE

Bodo Futterer, Lucerne; Jurgen Mayer, and Hugo Fritschy, both of Sachseln, all of Switzerland, assignors to Interelectric Aktiengesellschaft, Sachseln, Switzerland

Continuation of Ser. No. 43,178, May 29, 1979, abandoned, which is a division of Ser. No. 865,979, Dec. 30, 1977, Pat. No. 4,173,822. This application Apr. 30, 1981, Ser. No. 259,313

Int. Cl.³ H02K *15/14*

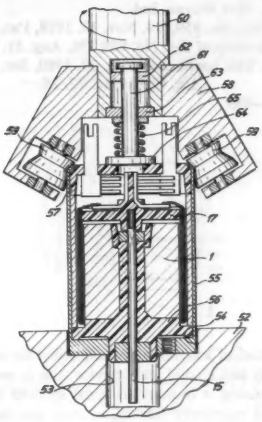
U.S. Cl. 29—596 **4 Claims**

1. A method for assembling an electric machine of the type including a permanent magnet mounted to a face plate, a generally cylindrical flux return ring spaced apart from and surrounding the magnet, a bell-shaped rotor, a cover plate including means for electrically connecting the rotor to electric terminals, and a cup-shaped metallic housing having a partially closed lower end and an open upper end and a generally cylindrical sidewall, the method comprising the following steps:

providing a base plate having a portion thereof adapted to receive the partially closed lower end of the housing;

locating the partially closed lower end of the housing at said portion of said base plate;

inserting the face plate and magnet mounted thereto into the housing adjacent the partially closed lower end;



inserting the flux return ring fully within the housing so a first edge of the ring nearest the open upper end of the housing is a first distance from the upper end;

placing the rotor within the housing with a portion thereof disposed between the magnet and the flux return ring;

mounting the cover plate adjacent the first edge of the flux return ring;

providing a rotating head including rollers positioned and shaped to engage the upper end of the housing; and

rotatably engaging the upper end of the housing with said rollers to bend the upper end inwardly against the cover plate to seal the electric machine within its cup shaped housing.

4,327,480

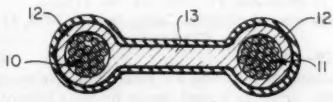
ELECTRICALLY CONDUCTIVE COMPOSITION, PROCESS FOR MAKING AN ARTICLE USING SAME

Cornelius J. N. Kelly, Simsbury, Conn., assignor to Ensign-Bickford Industries, Inc., Simsbury, Conn.

Division of Ser. No. 24,063, Mar. 26, 1979, Pat. No. 4,277,673. This application Dec. 12, 1980, Ser. No. 215,625

Int. Cl.³ H05B *3/00*

U.S. Cl. 29—611 **4 Claims**



1. The method of forming an electrically conductive composition having point-to-point electrical resistance that increases with increasing temperature comprising the steps of

(a) uniformly mixing a thermoplastic polymer having at least 20% crystallinity as determined by X-ray diffraction with

at least 6% by total weight of the mixture of a high dry resistivity carbon black;

(b) forming the desired shape; and

(c) thermal structuring that shape by annealing at a temperature at or above the crystalline melting point of the polymer for not more than approximately 8 hours to produce a substantially constant stable room temperature electrical resistance.

4,327,481

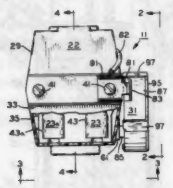
METHOD OF ASSEMBLING AN ELECTRICAL DEVICE

Lee O. Woods, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 959,914, Nov. 13, 1978, Pat. No. 4,241,494, which is a division of Ser. No. 829,276, Aug. 31, 1977, Pat. No. 4,164,000. This application Feb. 29, 1980, Ser. No. 126,070

Int. Cl.³ H01C *17/28*

U.S. Cl. 29—619 **1 Claim**



1. A method of assembling an electrical device including a current relay and a solid state device, the current relay comprising a housing, a dummy terminal secured to the housing and disposed exteriorly thereof, at least one female terminal disposed at least in part within the housing and connected in circuit relation with the dummy terminal, and at least one male terminal extending in part exteriorly of the housing, the solid state device comprising a casing, a PTCR in the casing, and a pair of means for electrical contacting engagement with the PTCR and extending in part without the casing, respectively, the method comprising the steps of:

arranging the casing at least adjacent to the housing exteriorly thereof;

associating the parts of the electrical contacting engagement means extending without the casing of the solid state device with the dummy terminal and the at least one male terminal of the current relay exteriorly of the housing thereof, respectively, and fixedly interconnecting the parts of the electrical contacting engagement means without the casing of the solid state device in circuit relation with the dummy terminal and the at least one male terminal without the housing of the current relay, respectively.

4,327,482

ELECTRONIC PARTS MOUNTING APPARATUS

Shigeru Araki, Katano; Yasuo Taki, Hirakata; Kazuhiro Mori; Yoshihiko Misawa, both of Katano, and Souhei Tanaka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 25, 1980, Ser. No. 115,279

Claims priority, application Japan, Jan. 25, 1979, 54/7764

Int. Cl.³ H05K *3/32*

U.S. Cl. 29—740 **10 Claims**

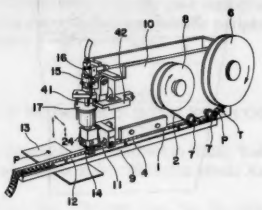
1. A mounting apparatus for picking up one-by-one electronic parts carried by a band carrier having a strip of flexible material with a plurality of recesses at equal intervals therealong each holding an electronic part therein and a tape removably attached to the top of the strip to cover all of the recesses, the apparatus then placing the picked up electronic parts on a circuit board, said apparatus comprising:

a frame;

a means on said frame for holding the carrier wound in a coil;

a means for unwinding the carrier and intermittently feeding the carrier in the direction of the length of the carrier in incremental movements corresponding to the intervals between the recesses;

a means for separating the tape from the strip;



a means for supporting the strip of the carrier from which the tape has been moved horizontally with the tops of the recesses open to expose the electronic parts within the recesses;

a means for picking up the electronic parts one-by-one from the recesses; and

a means for moving said picking up means together with the electronic parts to a position over a circuit board and then placing the electronic parts on the circuit board.

4,327,483

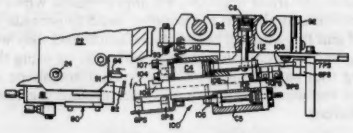
APPARATUS FOR SELECTING, TRANSPORTING, AND INSERTING SINGLE IN-LINE COMPONENTS

Albert W. Zemek, Windsor; Frederick G. Tomko, Vestal, and David C. Knapp, Binghamton, all of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,159

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—741 **34 Claims**

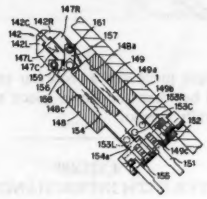


1. An apparatus for inserting electronic components, said electronic components having a body and a single series of in-line leads extending from a surface of said body, said apparatus comprising a component supply assembly having individual magazines for supply of said components one at a time, extensible and retractable shuttle means for gripping and positively extracting individual components from said component supply means and transporting said components to an unload station, movable component insertion means adjacent to said unload station, said component insertion means including a component pickup means for transfer of said components from said shuttle means to said insertion means at said unload station.

4,327,484
APPARATUS FOR INSERTING ELECTRONIC COMPONENTS TO A PRINTED CIRCUIT BOARD

Koichi Asai, Nagoya, and Tousuke Kawada, Chiryu, both of Japan, assignors to Fuji Mfg. Co., Ltd., Chiryu, Japan

Division of Ser. No. 936,578, Aug. 22, 1979, Pat. No. 4,215,469.
This application Feb. 7, 1980, Ser. No. 119,392
Claims priority, application Japan, Sep. 29, 1977, 52-117227; Oct. 12, 1977, 52-122159; Nov. 7, 1977, 52-133189
Int. Cl.[3] B23P *19/00*
U.S. Cl. 29—741 14 Claims



1. An apparatus for mounting electronic components on a printed circuit board comprising:

printed-circuit-board-positioning means for positioning a printed circuit board at a desired position for insertion of an electronic component at said position by means of moving said printed circuit board in a single plane;

means for inserting the lead wires of said electronic components in lead wire holes formed in said printed circuit board at said desired position from the front side thereof, said inserting means including at least one chuck for holding one of the said electronic components at a time;

a pair of blades positioned at the back side of said printed circuit board and mutually cooperable to shear the ends of said lead wires protruding out beyond the back side of said board after said lead wires are inserted,

means for moving said pair of blades towards said printed circuit board to shear the protruding ends of said lead wires; and

one of said blades being divided into a plurality of bladelets by at least one dividing plane substantially perpendicular to a cutting edge thereof;

means for changing the distance between two of said bladelets in said one of said blades after the shearing of said protruding ends is complete, said distance changing means comprising means to cause said bladelets to move in planes parallel to the plane of said printed circuit board to thereby bend the remaining protruding portions of said sheared lead wires in different directions with respect to each other.

11. Means for shearing and clinching a pair of lead wires of an electronic component inserted into lead wire inserting holes in a printed circuit board, said means for shearing the protruding portions on the back side of said printed circuit board of said lead wires at a preset length and clinching the sheared remaining lead wires comprising:

a first blade having one cutter which is to be halted at a preset position, at least when the shearing operation is carried out, in the vicinity of the back surface of said printed circuit board;

a second blade, which is in cooperation with said first blade for shearing said pair of lead wires, and which is divided into two cutter portions by a plane substantially perpendicular to the blade and the cutting edge of the blade;

reciprication means for advancing and retracting said second blade toward said first blade; and

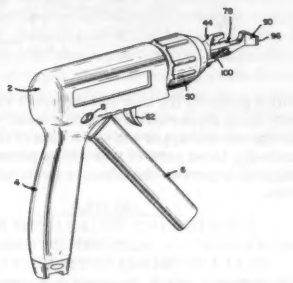
reciprocation means for advancing and retracting said second blade toward said first blade; and

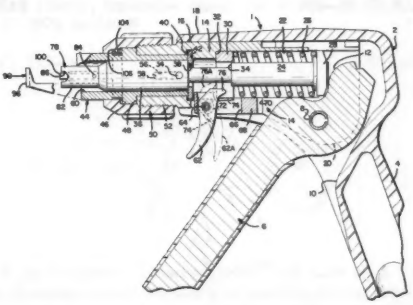
symmetrical moving means for symmetrically moving said two cutter portions of said second blade in directions other than the direction of said reciprocation movement for clinching the remaining sheared ends of said lead wires.

4,327,485
PISTOL GRIP TOOL

Robert D. Rix, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 21, 1980, Ser. No. 152,070
Int. Cl.[3] H01R *43/04*
U.S. Cl. 29—751 5 Claims





1. In a tool provided with a ram mounted in a casing and a lever mounted to the casing pivotally to displace the ram outwardly of the casing to provide a force-applying, tool stroke, the improvement comprising:

a shoulder provided on said ram, and

a trigger pivotally mounted on said casing and provided with a manually engageable portion and a stop portion projecting into the stroke path of said ram and being engaged by said shoulder to limit the extent of stroke, said trigger being pivotable to remove said stop portion from the stroke path of said ram.

4,327,486
METHOD OF MAKING A LAMP ASSEMBLY

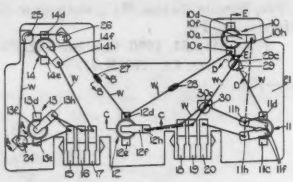
Brian P. G. Irons, Heckley Heath, England, assignor to Lucas Industries Ltd., Birmingham, England

Filed May 8, 1980, Ser. No. 148,050
Claims priority, application United Kingdom, May 25, 1979, 18390/79
Int. Cl.[3] H05K *3/02*
U.S. Cl. 29—847 9 Claims

1. A method of making a lamp assembly comprising the steps of:

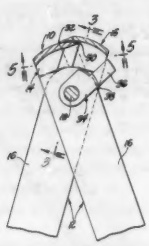
providing a plurality of bulb holders and a plurality of electrical supply contacts in a predetermined arrangement on an electrically insulating base; and

providing selective electrical wiring connections between the bulb holders and said supply contacts by providing a wiring pattern which includes at least one wiring arrangement in which one run of un-insulated wire crosses over another, the lower run of the crossed wire being engaged



with a guide on the base and the upper run of the crossed wire being supported on a support means on the base so as to separate said upper and lower runs of the wire, and then removing those parts of said wiring pattern which are not required to provide the selective electrical wiring connections.

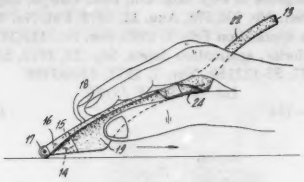
4,327,487
WOOD CUTTER
David A. Brownell, 332 E. Maplehurst, Ferndale, Mich. 48220
Filed Jul. 28, 1980, Ser. No. 173,149
Int. Cl.[3] B26B *13/06*
U.S. Cl. 30—128 **8 Claims**



1. A cutting tool (10) comprising: a pair of handles (12) pivotally connected together for movement about a pivot axis, said handles (12) extending through and defining a pair of coacting U-shaped cutting jaws (14, 15), each of said U-shaped jaws (14, 15) defining a cutting edge (30, 32) extending throughout the bases (26) and the side legs (28) of said U shapes, said jaws (14, 15) having a closed position wherein one of said jaws (14) is an inner jaw disposed within the other of said jaws (15) which is an outer jaw, said cutting edges (30, 32) being angulated in relation to each other so that the cutting edges (30, 32) defined by said side legs (28) of the respective jaws (14, 15) are not in coacting relationship before said bases (26) of the corresponding U-shaped jaws (14, 15); and knock-out means (34) disposed within one of said U-shaped jaws (14, 15) for abutting material served by said jaws (14, 15), said knock-out means being supported on said pivot axis.

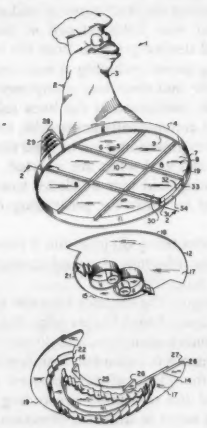
4,327,488
HAND HELD GLASS CUTTER
Peter Connolly, Parsippany, N.J., assignor to Red Devil Inc., Union, N.J.
Filed Aug. 22, 1980, Ser. No. 180,327
Int. Cl.[3] C03B *33/12*
U.S. Cl. 30—164.95 **9 Claims**

1. A hand tool for cutting glass comprising an elongated finger piece of somewhat triangular cross section, an elongated handle secured to and longitudinally extending from one end of the finger piece, a glass scoring member extending from the opposite end of the finger piece, a flattened finger table on the top of the finger piece, having a width to receive the index and middle fingers of the user, opposed concave recesses in the



sides of the finger piece and a cross bar carried by the finger piece disposed between the finger piece and the handle and extending laterally thereof.

4,327,489
DOUGH CUTTER WITH INTERCHANGEABLE CUTTING ELEMENTS
Jeff Conrad, Hoffman Estates, Ill., assignor to The Pillsbury Company, Minneapolis, Minn.
Filed Jan. 23, 1980, Ser. No. 114,768
Int. Cl.[3] B26B *3/00*
U.S. Cl. 30—299 **8 Claims**



1. A cookie cutter for cutting a piece of dough of predetermined shape from a layer of dough, said cookie cutter comprising:

a handle member having a hand engaging portion adapted to be grasped with the hand of a user and having retaining means for releasably retaining first and second cutting means on said handle member,

first cutting means including a first cutting member with a first peripheral edge and having a first cutting rib secured to and extending from the first cutting member, said first cutting rib having a first end and a second end,

second cutting means including a second cutting member with a second peripheral edge positioned adjacent to the first peripheral edge whereby said first and second cutting means are in side by side relationship when releasably retained by the retaining means on the handle member, said second cutting means having a second cutting rib secured to and extending from the second cutting member said second cutting rib having first and second ends whereby the first ends of the first and second cutting ribs are positioned adjacent one another and the second ends

of the first and second cutting ribs are positioned adjacent one another when the cutting members are in side by side relationship that a substantially continuous cutting rib is formed which will cut dough and form an outer periphery of a cut dough piece.

4,327,490

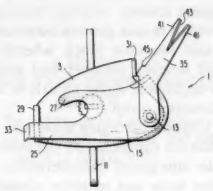
CAN OPENER

Nathan D. Hoskins, 6 Maywood Dr., Jackson, Tenn. 38301

Filed Jul. 14, 1980, Ser. No. 167,741

Int. Cl.³ B67B *7/32, 7/44*

U.S. Cl. 30—408 **5 Claims**



1. In a pocket can opener comprising a body with a propelling wheel and a handle for rotating the propelling wheel and a cutter blade pivotally attached to the body so that both the handle and the cutter blade can fold down across the body with the cutter blade overlying and being of such size as to cover the propelling wheel when the can opener is in inoperative condition; the improvement comprising a second blade pivotally mounted on the same pivot as the first blade and on the side of the first blade opposite the body, said second blade having a pair of legs whose confronting surfaces are sharpened edges for slitting flexible packaging material.

4,327,491

HOLDER FOR LEAD INSERT AND NEEDLE FOR A COMPASS

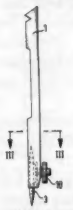
Günther Partes, Brunn, Fed. Rep. of Germany, assignor to Intertech Zeichengerate Genther Partes KG, Brunn, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 154,033

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2922999

Int. Cl.³ B43L *9/24*

U.S. Cl. 33—27 B **3 Claims**



1. In a compass leg having a lower leg portion with a means for holding a pin or marking insert, the improvement comprising: said lower leg portion having an elongated rectangular cavity with a first trapezoidal cross-section as determined by a plane passing through said leg at approximately a right angle with respect to the longitudinal axis of said leg, said cavity located in a lower portion of said leg and having an elongated opening formed in the side forming the base of said first trapezoidal cross-section, a first aperture formed in the wall opposite said opening and communicating with said cavity, and a second aperture formed in the bottom of said leg and communicating with said cavity; said holding means being commensurate in shape with and placed within said elongated cavity, said holding means being elongated and having a second trapezoidal cross-section as determined by a plane passing through said holding means at approximately a right angle with respect to the longitudinal axis of said holding means and an axial hole for receiving said pin or insert, the hole disposed such that the hold forms an axial slot in the side forming the base of the second trapezoidal cross-section, and a threaded shaft perpendicular to and attached to the side of said holding means opposite the side having a slot therein, said shaft projecting through said first aperture in said elongated cavity; and a nut engaging said threaded shaft and securing said elongated holding means with said elongated cavity, such that when said nut is tightened around said shaft, contact between the non-parallel sides forming the first trapezoidal cross-section and the non-parallel sides forming the second trapezoidal cross-section results in uniform compression of the non-parallel sides forming the second trapezoidal cross-section of said elongated holding means and clamping of said holding means around a substantial portion of the surface of the pin or marking insert.

4,327,492

LASER OSCILLATOR EMPLOYING A NEODYMIUM-DOPED YTTRIUM ALUMINATE LASER ROD HAVING AN IRON-DOPED LAYER

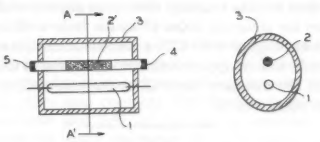
Toshiaki Masumoto, and Yasuhiko Kuwano, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1980, Ser. No. 136,916

Claims priority, application Japan, Apr. 6, 1979, 54/41778; Apr. 27, 1979, 54/52680

Int. Cl.³ H01S *3/16*

U.S. Cl. 372—41 **14 Claims**



1. A laser oscillator comprising a laser rod made of an yttrium aluminate crystal containing neodymium ions as active ions, an optical resonator disposed at the opposite ends of said laser rod, a pumping light source disposed adjacently to said laser rod, and cavity housing means for housing said laser rod and said pumping light source therein, the surface portion of said laser rod containing iron ions and the center portion of said laser rod being free of iron ions.

4,327,493

METHOD AND APPARATUS FOR MEASUREMENT OF DISTANCE BETWEEN HOLES WITH PARALLEL AXES

Lee R. Dickerson, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 4, 1980, Ser. No. 127,004

Int. Cl.³ G01B *5/14*

U.S. Cl. 33—143 R **10 Claims**

1. A gauge for measuring the center to center distance between two cylindrical holes located on parallel axes, comprising:

an elongate mounting member having a longitudinal extent;

a pair of measuring heads mounted on the elongate mounting member and adapted for selective space-apart longitudinal positioning thereon;

said measuring heads including portions rotatably mounted thereon about axes normal to the longitudinal extent of the elongate mounting member and parallel to each other;

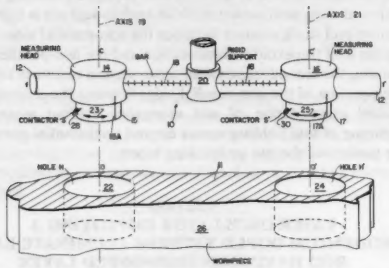
said portions adapted to be received within respective cylin-

drical holes with their axes parallel with the cylindrical hole axes and fixedly restrained therein; and

radially extendable contactor means carried on each rotatable portion and upon extension adapted to measure distances from the axis of the rotatable portion to four positions at 90° spacings on the wall of the cylindrical hole;

whereby the center to center distance between the two cylindrical holes is calculated according to the formula:

$$00'=\{[\tfrac{1}{2}(s_4-s_2)-\tfrac{1}{2}(s_4'-s_2')^2]+[CC'+\tfrac{1}{2}(s_1-s_3)+\tfrac{1}{2}(s_3'-s_1')]^2\}^{\frac{1}{2}}$$



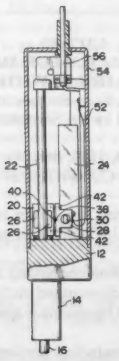
wherein, 00′ is the center to center distance between cylindrical holes to be measured; C is the axis of one rotatable portion; C′ is the axis of the other rotatable portion; CC′ is the distance between axes of the rotatable portions when they are restrained in the cylindrical holes; s_1 and s_3 are the distances from C to the hole wall in opposite directions aligned with CC′; s_1' and s_3' are the distances from C′ to the hole wall in opposite directions but aligned with CC′; s_2 and s_4 are the distances from C to the hole wall in opposite directions normal to CC′; and, s_2' and s_4' are the distances from C′ to the hole wall in opposite directions normal to CC′.

4,327,494

LINEAR GAUGE

Seigo Takahashi, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,205
Claims priority, application Japan, Oct. 22, 1979, 54-146814
Int. Cl.³ G01B 7/02
U.S. Cl. 33—172 E **1 Claim**



1. A linear gauge comprising:

a frame;

a spindle axially slidably supported by said frame and provided at the forward thereof with a measuring element;

a guide bar disposed in parallel to said spindle fixed on said frame;

a movable block fixed on the inner end portion of the spindle, said movable block having formed thereon a bifurcated portion which is slidably engaged with said guide bar;

a glass scale fixed in the frame in parallel to the spindle;

a holding member coupled to said movable block by clamping screws;

a groove formed on either a mounting surface of said holding member or said movable block and provided between said clamping screws;

a roller provided in said groove between said holding member and said movable block whereby the coupling between said holding member and said movable block is angularly adjustable about an axis of said roller by means of said clamping screws;

a luminous element, an index scale and a receptor element, all of which are supported by the movable block, with the glass scale interposed therebetween, said luminous element, index scale and receptor element being secured to said holding member;

a takeup pulley provided at the upper portion in the frame and a guide pulley provided at the lower portion in the frame;

a cord connected to one end thereof to the takeup pulley, and at the other end to the movable block and stretchingly provided around the guide pulley; and

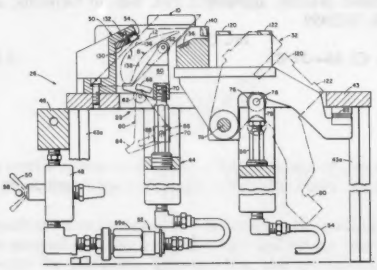
a spring engaged between the upper pulley and the frame for biasing the upper pulley in a rotating direction corresponding to the outwardly extending direction of the spindle.

4,327,495

VANE AIRFOIL METHOD AND APPARATUS

Robert Plante, Irving, Mass., assignor to The L. S. Starrett Company, Athol, Mass.

Filed Sep. 18, 1979, Ser. No. 76,772
Int. Cl.³ G01B 5/20, 5/26
U.S. Cl. 33—174 C **21 Claims**



1. Apparatus for characterizing the effective throat area of a partial nozzle assembly having one vane airfoil, said vane airfoil having a concave fluid deflecting surface and a convex fluid deflecting surface, comprising

a staging fixture for holding said single vane nozzle assembly in a predetermined position, said fixture having

holding means for supporting said assembly in a central position,

a first reference surface structure having a first reference surface in opposed juxtaposition to one of said deflecting surfaces and corresponding in direction and position to the location of a succeeding vane airfoil,

a second reference surface structure having a second reference surface in opposed juxtaposition to said other

deflecting surface and corresponding in direction and position to the location of a preceding vane airfoil, and means for locating said nozzle assembly in said holding means,

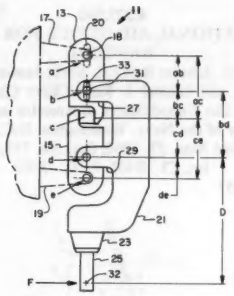
whereby open area measurements made with a standard reference vane element in said predetermined position, said reference element having first and second alignment surfaces corresponding respectively to said deflecting surfaces, characterize the effective throat area of said reference vane, said reference open area measurements for each of said first reference surface/first alignment surface and said second reference surface/second alignment surface being made between the reference surface and the juxtaposed alignment surface.

4,327,496

ADJUSTABLE LINK-TYPE INSERTION COMPLIANCE DEVICE

Jack Rebman, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Oct. 27, 1980, Ser. No. 200,688
Int. Cl.³ G01B 5/25
U.S. Cl. 33—180 R **16 Claims**



1. In an assembly machine operable to move a first mating part into engagement with a second mating part for assembly thereof, the improvement comprising an insertion compliance device for accommodating misalignment between said mating parts including:

a first pivot means mounted to said assembly machine;

a second pivot means mounted to said assembly machine at a spaced interval from said first pivot means;

compliance means disposed between said first pivot means and said second pivot means;

a first link element pivotally attached to said first pivot means adjacent one end, and fixed to said compliance means at the other end;

a second link element pivotally attached to said second pivot means adjacent one end, and fixed to said compliance means at the other end;

third pivot means mounted along said first link element between said first pivot means and said compliance means;

fourth pivot means mounted along said second link element between said second pivot means and said compliance means;

a third link element pivotally mounted to said third pivot means and said fourth pivot means, said third link element including holding means operable to hold said first mating part during said assembly operation;

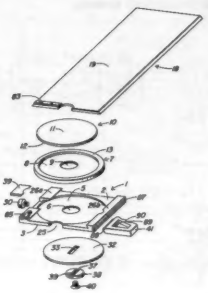
at least one of said pivot means including adjustment means, said adjustment means being operable to translate said at least one of said pivot means relative to the other pivot means for varying the location of the center of compliance of said insertion compliance device, whereby first mating parts of various lengths may be inserted within corresponding second mating parts with minimal wedging, jamming and reduced insertion loads.

4,327,497

MARINE COMPUTER

Robert H. Wyatt, Sr., 310 Castlewood Cir., Hyannis, Mass. 02601

Filed Mar. 13, 1980, Ser. No. 130,112
Int. Cl.³ G01C 21/22
U.S. Cl. 33—274 **25 Claims**



1. A graphic plotting instrument for solving navigational vector problems comprising:

a housing having a first side with a well formed therein and a second side;

a cursor disc disposed within said well formed on said first side of said housing and being rotatable about a central point, said cursor disc having a plurality of scaled cursor lines on an outer face thereof;

a compass disc mounted in said well formed on said first side of said housing concentrically with said cursor disc and being rotatable independently of said housing and of said cursor disc, said compass disc having an annular face visible from said first side of said housing and disposed between the outer perimeter of said cursor disc and the outer perimeter of said well, said annular face having a compass rose scale displayed thereon; and

an elongated, transparent plotting slide disposed upon said first side of said housing and being freely slidable over said annular face of said compass disc and said outer face of said cursor disc, said plotting slide being adapted for plotting thereon; and

rotation means secured to said cursor disc and extending through said housing to have an end projecting from said second side of said housing, said rotation means permitting manual rotation of said cursor disc by force applied to said end of said rotation means on said second side of said housing.

4,327,498

MAGNETIC COMPASS COMPENSATION SYSTEM

Alfred C. Setter, and Donald J. Kesselring, both of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,758
Int. Cl.³ G01C 17/38
U.S. Cl. 33—333 **7 Claims**

1. A magnetic compass system for a highly ferrous vehicle comprising:

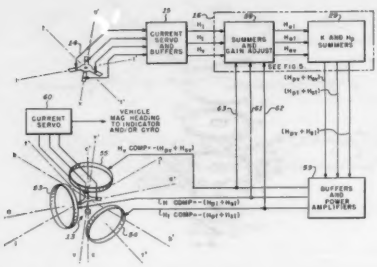
first magnetic field detector means fixed on said vehicle for generating first signals corresponding to components of the sum of the earth's magnetic field and the vehicle's permanent and induced magnetic fields thereat parallel to a coordinate axis system fixed relative to the vehicle;

second magnetic field detector means pendulously mounted on said vehicle adjacent said first detector means for

generating second signals corresponding to predetermined components of the earth's magnetic field thereat fixed relative to the earth,

magnetic field generating means fixed on said vehicle proximate to said second detector means for generating magnetic field components parallel to said fixed vehicle coordinate axes system,

processor means coupled to said first detector means and responsive to said first component signals for providing compensation signals corresponding to the components of the vehicle's permanent and induced magnetic field along said fixed vehicle primary coordinate axis system including feedback control means,


CURRENT SERVO AND BUFFERS
SUMMERS AND GAIN ADJUST
K AND H0 SUMMERS
SEE FIG. 5
CURRENT SERVO
VEHICLE MAG HEADING TO INDICATOR AND/OR GYRO
BUFFERS AND POWER AMPLIFIERS

means for supplying said compensation signals to said field generating means for generating corresponding magnetic fields proximate said second detector substantially equal and opposite to said components of the vehicle's permanent and induced magnetic fields whereby said second detector means provides output signals proportional to the said predetermined components of the earth's magnetic field only, and

means for supplying said compensation signals to said feedback control means for effectively removing said compensation signals from said first component signals.

4,327,499

DRAFTING APPARATUS

Lorenzo Ubezio, Dietikon, Switzerland, assignor to Reppisch-Werke AG, Dietikon, Switzerland

Filed Mar. 24, 1980, Ser. No. 133,603

Claims priority, application Switzerland, Apr. 3, 1979, 3075/79

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—438 **16 Claims**

1. A drafting apparatus for cooperation with a drafting board, comprising rail means, runner means **(3)**, adjustable connecting means operatively securing said runner means to said rail means **(2)** for displacing said rail means relative to a drafting board, whereby said rail means are displaceable and adjustable into an angular position relative to a centered position in which the rail means extend perpendicularly to an edge of a drafting board, arresting means **(20)** cooperating with said connecting means for holding said rail means in a fixed adjusted position, said apparatus further comprising carriage means **(6)**, magnetic means forming part of said carriage means and part of said rail means, whereby said carriage means is adjustably secured to said rail means by said magnetic means, ruler means **(5)** operatively secured to said carriage means **(6)** so that the position of said ruler means is adjustable by moving said carriage means along said rail means, and wherein said adjustable connecting means comprise first journal means **(12, 14)** operatively securing said runner means **(3)** to said rail means **(2)** for tilting said rail means **(2)** relative to said runner means **(3)**, said connecting means further comprising a rod **(19)**, slide means **(21, 22)** operatively securing one end of said rod **(19)** to said rail means **(2)**, and second journal means **(8, 18)** for tiltably securing the other end of said rod to said runner means.

4,327,500

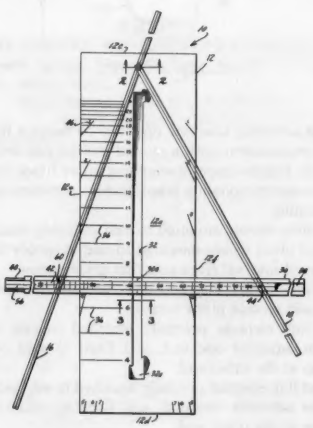
COMPUTATIONAL AID DEVICE FOR EKELUND RANGING

David C. Dickey, Ashton; Barry R. Korb; James H. Baroff, both of Bethesda, and Samuel J. Raff, Chevy Chase, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1968, Ser. No. 717,490

Int. Cl.³ B43L *7/00, 13/00*

U.S. Cl. 33—457 **2 Claims**



1. A computational device of the character described, comprising:

a rectangular base member **(12)** of transparent material having plane upper and lower surfaces **(12*a*, 12*b*)**, said base member having wall surfaces defining an elongated groove **(32)** of inverted T-shaped cross section in said upper surface, said groove extending parallel to the longer sides **(12*e*, 12*f*)** of said base member and centrally disposed therebetween;

a transverse bar **(30)** having an inverted T-shaped member extending from the central portion of said bar into said groove and cooperating with the surfaces of said body member defining said groove to maintain the long axis of said bar normal to said longer side edges of said base member and extending outwardly thereof while permit-

ting sliding translation of said bar through parallel positions thereof;

said bar having surfaces defining an elongated channel (38) along the length thereof;

a range scale member (40) mounted in said channel for sliding movement longitudinally of said bar;

a first elongated leg member (16);

a second elongated leg member (18);

pivot means pivotally securing said first and second leg members to said base member adjacent one end of said base member for independent pivotable movement about an axis (14) which is normal to said upper surface of said base member, said first and second leg members each being connected only to said base member and being movable to variably intersect said transverse bar and said range scale member, one of said leg members terminating at said pivot means, and the other of said leg members extending beyond said pivot means.

4,327,501

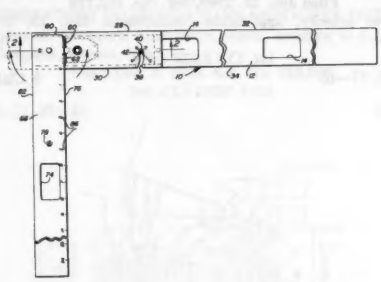
SQUARE ADAPTER FOR LEVEL

Alfred A. Hurt, 116 Harvey Ave., Oak Hill, W. Va. 25901

Filed Nov. 6, 1979, Ser. No. 91,745

Int. Cl.³ B43L *7/06*

U.S. Cl. 33—465 **4 Claims**



1. A square including an elongated body having at least one side edge defining a straight reference path and an elongated arm having parallel opposite side longitudinal edges and an end edge on one end disposed at right angles relative to said longitudinal edges, mounting means pivotally mounting said one end of said arm to the other end of said body for swinging of said arm relative to said body about an axis transverse to said arm and body and with said axis spaced equal distances from said end edge and said side longitudinal edges of said arm, said mounting means including latch means operative to releasably latch said arm in three successive 90° relatively rotated positions relative to said body in which said end edge or one of said side longitudinal edges parallels said reference path, said latch means including a latch member having a portion thereof shiftable relative to said body along a path segment disposed generally normal to the plane in which said arm may be swung relative to said body and spaced from said axis longitudinally along said body toward the other end thereof a distance substantially equal to the spacing between said axis, said end edge and said side longitudinal edges, said portion of said latch member defining a pair of laterally spaced tongues having free ends and disposed on opposite sides of a plane containing said axis and paralleling said reference path, said tongues being shiftable between an operative position wherein said tongues extend through an opening in said elongated body and an inoperative position retracted from said opening, means for biasing said tongues toward said operative position, said tongues, when disposed in said operative position, being tightly laterally abutted against one of said end and side longitudinal edges when said arm is in one of said three successive 90° relatively rotated positions, said free ends of said tongues extend away from said mounting means when said tongues occupy said operative position.

4,327,502

CONTROL DEVICE FOR A DRYING APPARATUS

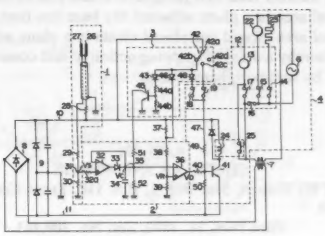
Katsuharu Matsuo, Aichi, and Tomio Hotta, Kuwana, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 17, 1980, Ser. No. 169,747

Claims priority, application Japan, Jul. 24, 1979, 54-94069; Aug. 20, 1979, 54-106267; Nov. 20, 1979, 54-151189

Int. Cl.³ F26B *21/10*

U.S. Cl. 34—43 **9 Claims**



1. A control device for a clothing drying apparatus, comprising:

instantaneous value detecting means having a pair of electrodes to be successively brought in contact with part of clothes stirred within a rotating drum of said drying apparatus for producing an instantaneous detection voltage indicative of the drying rate of the part of clothes in contact with said electrodes;

setting means for establishing a preset drying rate setting value;

comparing means, connected to said instantaneous value detecting means, for (a) storing a value of the instantaneous detection voltage and updating the stored value with certain changes in the instantaneous detection voltage (b) providing a function of the stored and updated values and (c) comparing the function with said preset drying rate setting value to produce a drying rate determination signal for said clothes; and

controlling means for integrating the drying rate determination signal from said comparing means and controlling a drying operation of said drying apparatus in accordance with the integrated value so as to bring the drying operation to a conclusion as the integral of the drying rate determination signal increases.

4,327,503

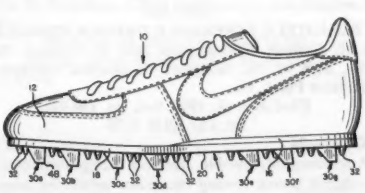
OUTER SOLE STRUCTURE FOR ATHLETIC SHOE

Jeffrey O. Johnson, Newton, N.H., assignor to BRS, Inc., Beaverton, Oreg.

Filed Jan. 17, 1980, Ser. No. 112,842

Int. Cl.³ A43B *13/04, 13/26;* A43C *15/00*

U.S. Cl. 36—32 R **19 Claims**



1. A sole for an athletic shoe, comprising a molded polymeric base and a plurality of integrally molded cleats extending outwardly from the base, including peripheral cleats each

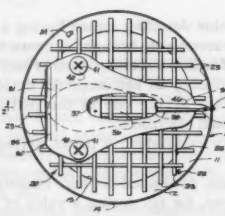
having the general shape of a section of a frustum, a majority of said peripheral cleats having a generally forwardly facing surface in the shape of a sectional surface of a cone, a generally rearwardly facing essentially flat surface, an essentially flat peripheral surface facing the periphery at which the respective first cleat is disposed and an essentially flat crown surface spaced from the base and joining with said forwardly facing surface, said rearwardly facing surface and said peripheral surface, and an interior array of conical cleats of a lesser height than that of the peripheral cleats, said conical cleats being of greater number than said peripheral cleats and having a cross-sectional area in a plane adjacent the base less than the cross-sectional area of said peripheral cleats in a plane adjacent the base whereby a delayed gripping action of said conical cleats is caused by said peripheral cleats.

4,327,504

CIRCULAR SNOWSHOE

Donald W. Welsch, Star Rte. 1, Box 110, Trout Creek, Mont. 59874

Filed Nov. 24, 1980, Ser. No. 209,461
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—122 **10 Claims**



1. A circular snowshoe, comprising:

an annular frame formed about a central axis, having axially spaced top and bottom surfaces joined by an inner annular edge and an outer annular edge concentric about the inner annular edge but spaced axially therefrom, said bottom surface facing angularly inward toward the central axis to enable the outer annular edge to bite into the snow;

a web spanning the annular frame and mounted thereto along the top surface thereof, the web being spaced axially from the bottom surface;

the web having a top surface facing upwardly and an oppositely facing bottom surface with a peripheral edge thereof overlapping the inner annular frame edge and engaging the top frame surface; and

binding means on the top web surface for releasably securing the web and frame to a user's foot.

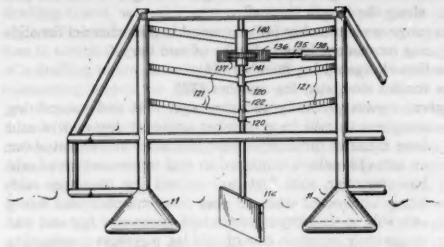
4,327,505

REMOTELY STEERABLE DREDGE VEHICLE

Mark H. Hinman, Seaford, and John P. Latimer, Newport News, both of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Jun. 19, 1980, Ser. No. 160,947
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—54 **22 Claims**

1. A nonbuoyant, towable, steerable dredge vehicle comprising a chassis frame; towing connector means for connecting the dredge veicle to a tow line; at least one skid surface structurally connected to the chassis frame, and upon which the chassis frame rides when being towed along the ocean floor; a rigid steering member extending downwardly below the skid surface, the steering member being longitudinally elongated and rotatably connected to the dredge vehicle; and remotely



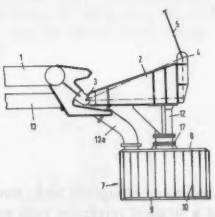
controlled activating means to rotate the steering member about a generally vertical axis transverse to the skid surface.

4,327,506

GEAR CASE FOR A SUCTION CUTTER DREDGER

Wouter A. Bos, Dordrecht, Netherlands, assignor to Reba B.V., Dordrecht, Netherlands

Filed Jun. 25, 1980, Ser. No. 162,770
Claims priority, application Netherlands, Jun. 25, 1979, 7904944
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—65 **8 Claims**



1. A gear case for a rotary cutter head, said case connected to a ladder extending from a suction cutter dredger, said case comprising a configuration having at least two ends, said configuration having connecting members positioned at the ends thereof each of said members adapted to pivotally connect said gear case to said ladder, a drive shaft attached to and extending from, said gear case, said shaft having a rotary cutter head attached to the end thereof.

4,327,507

ROTARY CUTTER HEAD WITH JET FLUSHING BLADES

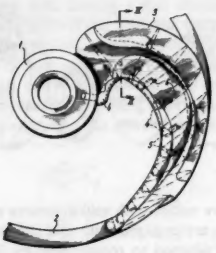
Johan H. Volbeda, Leidschendam, Netherlands, assignor to Hollandsche Aanneming Maatschappij B.V., Rijswijk, Netherlands

Filed May 28, 1980, Ser. No. 154,177
Claims priority, application Netherlands, May 28, 1979, 7904177
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—67 **2 Claims**

1. A generally circular cutter head for a suction dredger having a plurality of helically and radially oriented cutting blades mounted thereon, said head being rotatably driven in operation such that said blades cut loose soil which , when mixed with water, is withdrawn by suction tube means, characterized by:

(a) at least one fluid ejecting nozzle disposed on each blade to the rear of a leading, cutting edge thereof relative to the

direction of rotation of said cutter head, each nozzle being directed generally radially outwardly relative to a central hub of said cutter head such that a fluid jet emanating



therefrom pretreats the soil portion to be cut loose by the next cutting blade, and

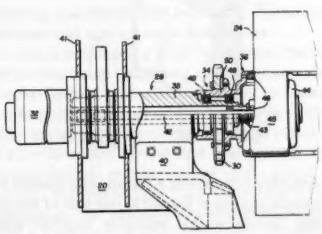
(b) means for communicating a pressurized supply of fluid to said nozzles.

4,327,508

TRENCHER DIGGING CHAIN SPROCKET DRIVE

Stephen A. Youngers, Clearwater, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 8, 1980, Ser. No. 213,805
Int. Cl.³ E02F *5/06*
U.S. Cl. 37—86 **1 Claim**



1. In a hydrostatically operated trenching machine including a digging boom which is connected to the frame of a tractor for pivotal movement, a digging chain rotatably mounted on said boom and said digging chain being driven by a drive sprocket, and an auger for dispersing the spoil that is dug during the trenching operation to the sides of a trench, the improvement comprising:

a totally enclosed drive train assembly for rotatably driving the digging chain drive sprocket and spoil dispersing auger, said drive train assembly including a generally cylindrical boom lift casting mounted to said tractor frame, a hydraulic motor mounted to one end of said boom lift casting and a planetary gearbox mounted to the opposite end of said casting, said motor being drivingly connected to gears in said gearbox by a drive shaft which passes through said boom lift casting;

said planetary gearbox including a housing for rotatably mounting said auger, said housing being rotatably driven by said hydraulic motor through said gears in said gearbox, and said housing and connected auger acting as a heat sink for dissipating heat generated by the driven gears within said gearbox; and

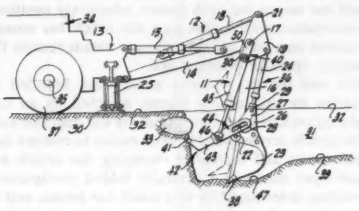
said digging chain drive sprocket being rotatably mounted on said boom lift casting adjacent said gearbox, said drive sprocket and gearbox housing being mounted to and interconnected by a hub member such that the rotational driving force received by said gearbox housing from said motor is transmitted to said drive sprocket through said hub member whereby the digging chain drive sprocket and spoil dispersing auger are driven in unison.

4,327,509

RIPPER TOOTH ATTACHMENT FOR A BACK HOE

Rufus C. Bean, P.O. Box 100, Clipper Mills, Calif. 95930

Filed Jun. 30, 1980, Ser. No. 164,590
Int. Cl.³ E02F *3/76*
U.S. Cl. 37—117.5 **7 Claims**



1. Ripper tooth attachment for a back hoe including a back hoe frame, and an articulated back hoe boom, dipper and bucket, said attachment comprising:

a. an elongated shank having a ripper tooth on one end;

b. yoke means for mounting the other end of said shank on the end of the dipper adjacent the bucket for pivotal movement relative thereto, said yoke means including a pair of elongated side plates, one of said side plates including an elongated notched slot, the other of said side plates including a ball pivot opposite said slot, and a pivot pin journaled on the dipper adjacent the back hoe bucket, one end of said pivot pin being connected to said ball pivot and the other end projecting through said slot; and,

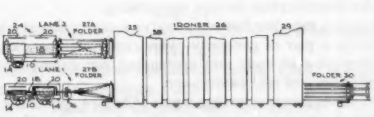
c. a pair of hydraulic rams pivotally mounted at one end on opposite ends of the center pivot pin of the boom and the dipper and at the other end on opposite sides of said side plates, retraction of one of said rams and the simultaneous immobilization of the other of said rams being effective to shift said yoke means angularly laterally, said rams being effective to move said ripper tooth between a first fully retracted position when the back hoe bucket is operated for conventional digging, a second fully extended position when the frame and boom form one leg of an "A" frame and the dipper and the bucket form the other leg of the "A" frame with the bucket supported by the ground, and a third partially extended position in which said ripper tooth is moved forwardly and upwardly by said rams into lifting engagement with the material to be fractured while said rams are supported by the "A" frame.

4,327,510

MULTI-STATION LAUNDRY FEEDER

Frederick W. Grantham, 12055 Goshen Ave., Los Angeles, Calif. 90049

Filed Jul. 28, 1980, Ser. No. 172,934
Int. Cl.³ D06F *67/02, 67/04;* A41H *33/00*
U.S. Cl. 38—8 **28 Claims**



1. A multi-station feeder for articles comprising:

article supply means;

plural stations for receiving articles from said supply means, each station including an operator position;

article feed means adjacent each station including conveyor means extending alongside the associated operator positions and adapted to carry articles positioned thereon, the plural stations being arranged in separate lanes, side by side, each lane including at least two operator stations serially positioned side by side along individual article supply means and article conveyor means common to that lane, the arrangement being adapted to permit operators at the side-by-side stations to select articles from the common supply means and place them on the adjacent conveyor means without interference between the stations;

touch bar means for each station selectively positionable in accordance with article size, the touch bar means being located on a side of the conveyor means remote from the station operator position; and

article exit means, whereby articles are supplied to each station by said supply means, selected by an operator, placed on said conveyor means by the operator extending the article across the conveyor means to contact the touch bar means and thereafter dropping the article over the conveyor means in a centrally folded configuration in a position determined by said touch bar means, and thereafter conveyed to said exit means.

4,327,511

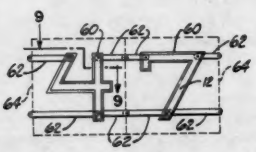
LUMINESCENT ALPHANUMERIC MODULAR DISPLAY

Paul R. Rodriquez, 14118 81st Pl. NE, Bothell, Wash. 98011

Filed Mar. 24, 1980, Ser. No. 132,876

Int. Cl.³ G09F *13/22, 3/04, 7/00*

U.S. Cl. 40—544 **16 Claims**



1. A luminescent alphanumeric modular display, comprising:

an electroluminescent sheet having the shape of an alphanumeric character, said sheet having a pair of power leads to which an alternating current power signal is applied to illuminate said sheet;

a base of rigid material on which the rear face of said character is mounted; and

an exciter unit imbedded in said base having its output connected to the power leads of said electroluminescent sheet said exciter unit transforming electrical power from an external source to alternating current power of the appropriate frequency and voltage to drive said electroluminescent sheet.

4,327,512

IDENTIFICATION DEVICE

Robert L. Oliver, 3570 Cartwright St., Pasadena, Calif. 91107

Filed Dec. 11, 1980, Ser. No. 215,525

Int. Cl.³ A44C *3/00*; G09F *3/18*; B65D *85/02, 6/12*

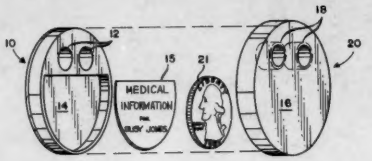
U.S. Cl. 40—2 E **10 Claims**

1. An identification device, comprising:

(a) a case member having a body, a cavity formed in said body, a pair of generally cylindrical apertures extending through said body and upstanding rim means along the periphery of said cavity; and

(b) a cover member having a pair of hollow, generally cylindrical projections open at each end extending therefrom, said projections being adapted to mate with said apertures of said case member throughout a substantial portion of their length; said cover member having about its periphery, means arranged to engage said rim means ;

(c) said cover and case members cooperating, when said



projections are mated with said apertures and said rimengaging means are engaged with said rim means, to define an enclosure adapted to receive and enclose an indicia-carrying object.

4,327,513

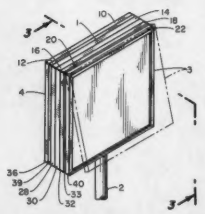
ILLUMINATED OUTDOOR SIGN AND HOUSING

Melinda de Gunzburg, Beverly Hills, Calif., assignor to Pana-Plex Company, Inc., Sherman Oaks, Calif.

Filed Jan. 21, 1980, Ser. No. 113,997

Int. Cl.³ G09F *13/00*

U.S. Cl. 40—572 **20 Claims**



1. A sign assembly comprising a rectangular-shaped housing and at least one display panel hinged to one side of the housing;

said housing having a first elongate member extending across the upper edge of said side with a portion defining a longitudinal groove having an arcuate surface, and said first elongate member further having a longitudinally-arcuate concave portion coaxial with the axis of said groove surface; and

said display panel having a second elongate member extending across the upper edge thereof with a portion defining a boss positioned and received in the groove of said first elongate member with an arcuate surface coaxial with said axis and mating with the arcuate surface of said groove, and said second elongate member having a longitudinally-extending arcuate convex portion coaxial with the axis of said boss and disposed in sliding relationship with said concave portion of said first elongate member.

4,327,514

CROSSARM YARD SIGN SUPPORT

George O. Bourque, 665 Jackson Ave., Winter Park, Fla. 32789

Continuation-in-part of Ser. No. 50,667, Jun. 6, 1979, Pat. No. 4,258,494. This application Mar. 26, 1981, Ser. No. 247,822

Int. Cl.³ G09F *15/00*

U.S. Cl. 40—607 **7 Claims**

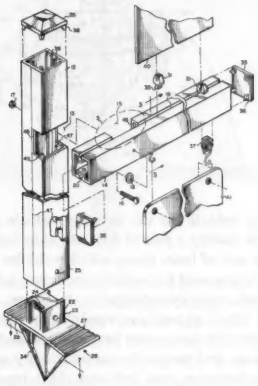
1. A support post for signs and the like comprising:

a vertical post formed from a hollow metal tube having a plurality of vertical internal splines;

a downward projecting spike assembly attached to the lower

end of said vertical post and adapted to be forced into the ground by foot pressure or the like; and

a horizontal crossarm attached to said vertical post near the upper end thereof, said horizontal crossarm formed from a hollow metal tube having a first channel formed in the lower surface thereof and a second channel formed in the upper surface thereof, said first channel adapted to accept a plurality of sign supporting eye devices at any selected points along said first channel, said second channel for accepting a plurality of pliable inserts having vertical slots therein for accepting the lower edge of an auxiliary sign



whereby said sign is held in a vertical position by friction between said sign and said inserts;

said vertical post having a cutout portion thereof, said cutout portion being cut through at least some of said vertical internal splines, and said horizontal crossarm having a cutout portion thereof adapted to match with and fit into said vertical post cutout, said crossarm cutout portion cut to provide a face of said first channel and a face of said second channel to bear against said vertical post cutout portion, and portions of said upper and lower surfaces arranged to bear against said cut spline surfaces to thereby form a rigid vertical post/horizontal crossarm joint.

4,327,515

STARTER FOR MUZZLE LOADING FIREARM

Walter Kury, 262 Britannia St., Meriden, Conn. 06450

Filed Jun. 2, 1980, Ser. No. 155,296

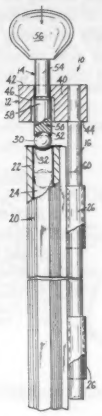
Int. Cl.³ F41C *27/00*

U.S. Cl. 42—90 **18 Claims**

1. A starter for loading a projectile in a muzzle loading firearm comprising:

(a) a guide means having a top and bottom;

(b) a plunger means slidably received in said guide means, said plunger means being capable of extending through the bottom of said guide means; and



(c) a rod extending from the bottom of said guide means, said rod being parallel to said plunger means.

4,327,516

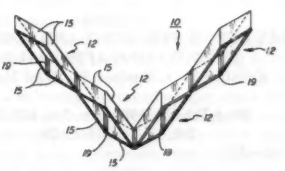
FOLDABLE STRUCTURE

Lisa J. Lubozynski, 212 Kensington Pl., Syracuse, N.Y. 13210

Filed Oct. 20, 1980, Ser. No. 198,916

Int. Cl.³ A63H *33/10;* **F16G** *13/06;* **A63H** *33/00*

U.S. Cl. 46—31 **7 Claims**



1. A foldable structure that includes a plurality of foldable units that are cojoined to form a chain, each unit being made up of a plurality of rhombic-shaped panels that are hinged along abutting oblique side edges by first hinge means to form a foldable enclosure having an open top and bottom so that the panels can be collapsed upon themselves in one direction to form a flat four-sided structure and in a second direction to form a a flat multi-sided structure having a central opening describing a polygon having a number of sides equal in number to the number of panels contained in the unit, and which further includes second hinge means for connecting each adjacent unit in the chain along abutting oblique side edges whereby the shape of each unit in the chain may be changed between the two noted flat positions as well as the relative position of each adjacent unit along the chain.

4,327,517

STEERING MECHANISM FOR SCALE MODEL VEHICLES

Frederic A. Schwager, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 15, 1980, Ser. No. 216,596

Int. Cl.³ A63H *17/26, 17/36*

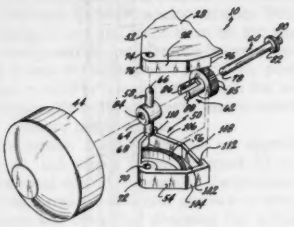
U.S. Cl. 46—221 **3 Claims**

1. A steering mechanism for a scale model vehicle having a

chassis and a pair of wheels, said steering mechanism comprising:

a pair of axles each having an outboard end non-rotatably coupled to one of said wheels and an inboard end;

means for rotatably mounting each of said axles to said chassis, each of said mounting means being rotatably mounted to said chassis, whereby each of said axles may



be swung through predetermined arcs in a horizontal plane;

means affixed to said chassis for stopping each of said axles at each end of an associated one of said arcs; and

means coupled to each of said axles for swinging said axles through said arcs said swinging means including a pinion gear frictionally coupled to each of said axles and a fixed arcuate rack engaging each of said pinion gears.

4,327,518

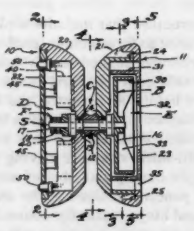
INERTIAL DEVICE FOR SIGHT AND SOUND EFFECTS IN ROTATING APPARATUS

Robert J. Knauff, 819 N. Gardner St., West Hollywood, Calif. 90046

Filed Feb. 27, 1980, Ser. No. 125,032

Int. Cl.³ A63H *33/26*

U.S. Cl. 46—228 **20 Claims**



1. An inertia device for sensory effect and including, primary and secondary free spinning inertia means rotating on a common axis with a friction drive means therebetween, and said inertia means being rotatable at differential angular velocities and said velocity differential being applied to a sight effect means carried by one of said inertia means and comprised of a battery in series circuit with an instantaneously illuminating On-Off diode visible from the device and a commutator switch in said circuit and operated by differential rotation of the primary and secondary inertia means for On-Off control thereof when the primary inertia means is rotatively accelerated.

4,327,519

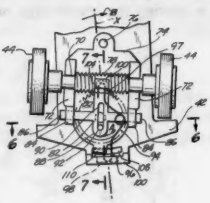
WANDERING DRONE CAR

Julius Cooper, New Hyde Park, and Burt W. Ensmann, Flushing, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Continuation of Ser. No. 12,544, Feb. 15, 1979, abandoned. This application Dec. 9, 1980, Ser. No. 214,551

Int. Cl.³ A63F *9/14*; A63H *17/36*

U.S. Cl. 46—262 **3 Claims**



1. A toy vehicle for use in a toy vehicle game including a guide track having a pair of spaced guide walls defining therebetween a pair of lanes along which vehicles may move in side by side relation, said toy vehicle including a frame, at least one drive wheel rotatably mounted in the frame, means for driving said drive wheel, at least one rotatable steering wheel mounted in said frame for movement between left and right hand steering positions, and means for automatically steering said steering wheel between said left and right hand positions in an apparently random alternating steering motion while holding the steering wheels in one or the other of said steering positions between steering movements thereby to cause the vehicle to automatically change lanes while being steered into engagement with one or the other of the side walls between steering movements to be guided therealong;

said steering means including a pivot plate pivotally mounted on said frame for horizontal pivotal movement; said steering wheel being mounted on said plate for movement therewith, and means for moving said plate at predetermined intervals from one steering position to another while holding the plate in a steering position between steering movements; said means for moving the plate including a gear having an eccentric pin projecting therefrom, a follower having a elongated slot formed therein receiving said pin and being slidably mounted for transverse movement on said pivot plate, and "over the center" spring means operatively connected between said follower and said frame to move said plate between said steering positions during rotation of said gear and to hold the plate in said steering positions between steering movements.

4,327,520

CLOCHES

Michael E. Saxby, The Hawthorns, Norton Lea, Norton Lindsey, Warwickshire, and John W. Rilett, 6, Old Quarry, Bibury, Gloucestershire, both of England

Filed Jun. 30, 1980, Ser. No. 164,126

Claims priority, application United Kingdom, Jul. 5, 1979, 23444/79

Int. Cl.³ A01G *13/04*

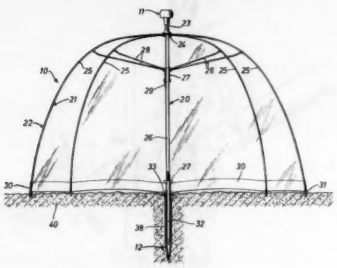
U.S. Cl. 47—29 **7 Claims**

1. A garden cloche comprising:

(a) an umbrella structure including a canopy stretchingly attached to a framework which is mounted on a shaft,

(b) said framework including a collar assembly fixed to the shaft, and a single carrier movably disposed on the shaft between an open framework position and a closed framework position.

(c) catch means for releaseably holding the single carrier in a fully opened position of the framework,
(d) said canopy having a depth greater than half of the overall width of the canopy when the framework is in the fully opened position,
(e) the canopy being formed of a transparent or translucent plastic sheet material,
(f) the shaft including an apex part and a bottom end part,
(g) said apex part projecting through the canopy and supporting the fixed collar assembly and a knob or handle,



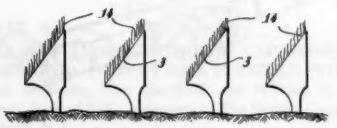
(h) said bottom end part being remote from the apex part and including an elongate spike having a length, which length is sufficient to enable the bottom end part, when the framework is fully opened, to be inserted into level soil by pressing vertically downwardly on the knob or handle until peripheral end parts of the framework abut, engage or are proximal to the soil,
(i) said canopy being stretched over the framework with said single carrier releaseably held in said fully opened position by the catch means to form a covering enclosure over a defined area of the soil.

4,327,521

SYSTEM FOR INCREASING THE GROWTH POTENTIAL OF HEDGE-ROW CULTURED PERENNIAL CROP PLANTS

Stanley I. Mason, Jr., Weston, Conn., and H. William Scheld, Houston, Tex., assignors to Simco, Inc., Weston, Conn.

Filed Oct. 23, 1980, Ser. No. 200,258
Int. Cl.³ A01G *1/00*; A01D *55/00*
U.S. Cl. 47—58 **10 Claims**



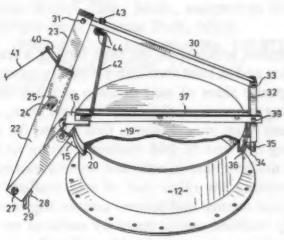
1. A method of growing hedge-type, harvestable perennial plants to provide enhanced plant growth, enhanced utilization of available sunlight for photosynthesis, and more efficient crop yield per unit area of land, the steps of said method including:
planting said plants to be grown in at least one row, said row running in a substantially east-west direction,
determining the solar altitude angle for the latitude and for the peak daily photosynthetic activity period during the growing season of the specific plant to be grown, said solar altitude angle being the angle defined between the sun's rays and the horizon,
cutting the upper portion of said plants in said row at an angle so as to provide said plants with an upper planar surface that
(1) increases the growth surface area for crops on said upper planar surface, and
(2) is orientated so that it faces the direction of the sun during the peak daily photosynthetic activity period of said plant during said growing season,
whereby said upper planar surfaces of said plants provide increased crop growth area which is oriented to receive at least a predetermined minimum quantity of sunlight during said growing period to provide enhanced photosynthetic activity for providing increased plant growth.

4,327,522

ASSEMBLY FOR ACTUATION OF OPENABLE CLOSURE LID

William W. Meadows, Winnipeg, Canada, assignor to Westeel-Rosco Limited, Toronto, Canada

Filed Nov. 13, 1979, Ser. No. 94,330
Int. Cl.³ E05F *11/04*
U.S. Cl. 49—279 **5 Claims**



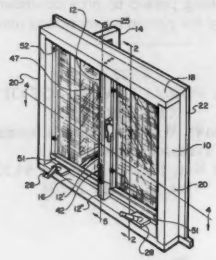
1. An assembly for actuation of an openable closure lid, the assembly comprising a closure lid pivotally mounted about a fixed pivot axis for pivotal movement between a closed position and a raised open position;
a lever member having a lower end portion pivotally mounted about a fixed pivot axis and having an upper end portion;
an operating arm having a first end portion and a second end portion with said first end portion being pivotally connected to the upper end portion of the lever member;
stiff but resilient means interconnecting the closure lid and the operating arm for resiliently urging the operating arm relative to the closure lid in the direction of the second end portion of the operating arm during pivotal movement of the closure lid between the closed and open positions thereof; and
a latch arm having an upper end portion and a lower end portion with said upper end portion of the latch arm being pivotally connected to the second end portion of the operating arm and with a latch member being presented by the lower end portion of the latch arm;
the lever member comprising a lower lever and an upper lever which is pivotally connected to the lower lever;
the levers having respective abutment portions which, in a limit condition of the levers, are in contact to limit relative pivotal movement between the levers in a direction in which the upper lever pivots relative to the lower lever away from the operating arm;
spring means acting between the levers resiliently to urge the levers towards said limit condition thereof;
the latch arm being pivotally connected to the closure lid at a spaced distance from the fixed pivot axis of the closure lid;
the latch member when the closure lid is in the closed position thereof being engageable with a fixed member adapted to be provided below the closure lid;
and a flexible member being connected to the lower lever for pivotal movement thereof about the fixed pivot axis of the lever member.

4,327,523

EMERGENCY EGRESS CASEMENT WINDOW

Edward J. Gravely, Charlotte, N.C., assignor to Universal Window Corporation, Charlotte, N.C.

Filed Jan. 17, 1979, Ser. No. 4,038
Int. Cl.³ E05C *15/02*
U.S. Cl. 49—141 **15 Claims**



1. In a casement window of the type having a frame with a mullion portion and at least two sash pivotably mounted in said frame on opposite sides of said mullion portion for outward pivotal opening movement, the improvement comprising mullion base means fixed in said frame, first means for disengagably connecting one end of said mullion portion to said frame opposite said mullion base means, and second means for disengagably connecting the other end of said mullion portion to said mullion base means, said second connecting means including outwardly inclined complementary surfaces on said other end of said mullion portion and said mullion base means, said first and second connecting means providing for inward seating of said mullion portion in said frame including inward wedging of said other end of said mullion portion in said frame at said mullion base means thereof for ordinary opening and closure operation of said sash with respect to said mullion portion while being yieldable in response to a force directed outwardly against said other end of said mullion portion adjacent said complementary surfaces of said second connecting means to permit outward separation and ejection of said mullion portion from said frame, thereby permitting removal of said mullion portion from said frame as an obstacle to emergency egress through the window.

4,327,524

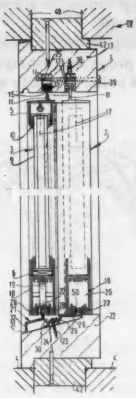
WINDOW-FRAME HAVING A SASH-WINDOW ARRANGED IN IT

Jan G. van der Laan, Dieren, Netherlands, assignor to National Grondbezit N.V., The Hague and Agterhof Beheer N.V., Doetinchem, both of, Netherlands

Filed Feb. 29, 1980, Ser. No. 126,049
Int. Cl.³ E05D *13/02*
U.S. Cl. 49—425 **3 Claims**

1. In a closure assembly of the type comprising: a wooden, generally rectangular frame adapted for direct mounting in a masonary wall, and composed of an upper lintel and a lower ledge joined by two side jambs, said frame also having arranged therein at least one slidable sash-window and another window, each of which includes a metal framework and at least one glass plate mounted therein, said sash-window having an upper strip and at least one upstanding upper flange coupled to said upper strip and engaging in a guide groove of said wooden lintel, said guide groove in said lintel having a free space above said upper flange, said sash-window also having a lower strip and a plurality of wheels rotatably arranged in said lower strip, said wheels running along a metal rail fastened to said wooden lower ledge of said frame, said sash-window also having at least one side strip with a side flange engaging in a sealing groove of said wooden jamb and another side strip with at least one flange engaging in its closing position in a U-profile of said other window for constituting a zig-zag shaped sealing space, the improvement comprising:

said upper flange carrying on both sides thereof sealing brushes in the guide grooves of said lintel, said side flange



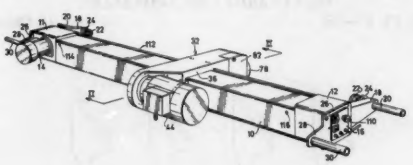
having sealing brushes on both its sides, said lower strip of the sash-window having sealing brushes on both sides of the rail head in sealing relationship with said rail head, and two sealing brushes for sealing the zig-zag shaped sealing space.

4,327,525

SERVICING ATTACHMENT FOR A CARDING MACHINE

Brian J. Ennis, Sowerby Bridge, England, assignor to The English Card Clothing Company Limited, Huddersfield, England

Filed Mar. 9, 1979, Ser. No. 18,936
Int. Cl.³ B24B *19/18*; D01G *15/80*
U.S. Cl. 51—242 **6 Claims**



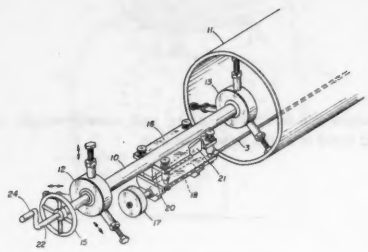
1. A servicing attachment for use on a carding machine, of the type which has a rotary device for co-operation with a roller of the machine, said servicing attachment having a longitudinally extending support structure and a traversing unit which unit itself comprises a carriage, a spindle for the rotary device mounted on said carriage, and a driving motor for the rotary device also mounted on said carriage, means mounting said traversing unit for longitudinal reciprocation on said support structure; an arm projecting laterally from each end of said support structure, a stub axle carried by each said arm, said two stub axles being coaxial with the axis of said spindle, whereby when said stub axles are located in bearings on a carding machine, adjacent to a roller to be serviced, there is a range of angles about the axis of said spindle at which the attachment can be orientated without altering the setting between the rotary device and the roller to be serviced.

4,327,526

APPARATUS FOR GRINDING THE INTERNAL WALLS OF PIPES

William H. Pettyjohn, Chattanooga; John T. Lewis, Hixson, both of Tenn., and William E. Milligan, deceased, late of Soddy, Tenn. (by Thelma K. Milligan, administratrix), assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 23, 1980, Ser. No. 162,061
Int. Cl.[3] B24B 5/40
U.S. Cl. 51—245 4 Claims



1. An apparatus for grinding at a station on the internal wall of a pipe, including,

a pipe having stations on its internal wall requiring grinding,

a tubular shaft adapted to be inserted into the pipe with an intermediate portion opposite the station at which grinding is to take place,

a spider structure mounted at each end of the tubular shaft arranged to engage the wall of the pipe and support the tubular shaft along the axis of the pipe,

bearing structure between the support spiders and the tubular shaft through which the tubular shaft is moved axially within the pipe and rotated by an attached handwheel,

a support assembly mounted intermediate the spider-supported ends of the tubular shaft,

extension structure mounted on the support assembly including a pair of wedges with one of the wedges positioned parallel the axis of the tubular shaft by a manually operated rod extended through the tubular shaft from one end of the shaft,

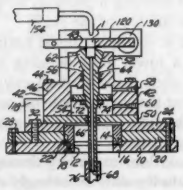
and a motor and grinder head connected to the extension structure to be moved radially to bring the grinder head into engagement with the internal wall of the pipe at the predetermined station.

4,327,527

APPARATUS AND METHOD FOR ADJUSTING THE TORSIONAL OUTPUT OF A FLEXIBLE PIVOT

Frederick A. Seelig, New Hartford, and William E. Coman, Newport, both of N.Y., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Jun. 30, 1980, Ser. No. 164,668
Int. Cl.[3] B24C 1/00, 3/18; B23Q 17/00
U.S. Cl. 51—416 34 Claims



1. An apparatus for adjusting the spring rate of a resilient article operative to produce a torsional force about a predetermined axis of rotational displacement, characterized by:

a rotary stage having an axis of rotation;

means attached to said rotary stage for fixedly holding one end of said resilient article with said predetermined axis of rotational displacement concentric with axis of rotation;

means for precisely rotating said rotary stage about said axis of rotation between a first angular position and at least a second angular position;

stationary force transducer means connected to the other end of said resilient article for generating a force signal indicative of the torsional force generated by the resilient article when said rotary stage is rotated from said first to said second angular position; and

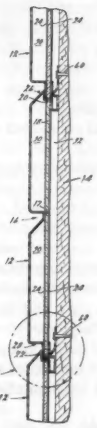
air abrasive means for abrading the resilient member to reduce said force signal to a desired value with said rotary stage in said second position.

4,327,528

INSULATED SIDING SYSTEM

Jack E. Fritz, Walled Lake, Mich., assignor to Wolverine Aluminum Corporation, Lincoln Park, Mich.

Filed Feb. 29, 1980, Ser. No. 125,872
Int. Cl.[3] E04C 2/34, 2/10
U.S. Cl. 52—309.1 19 Claims



1. A vinyl siding system for application to an outer surface of a building, said system comprising

a plurality of interconnected elongated siding panels having outer wall members, two elongated edges, first channel means adjacent one of said edges and second channel means adjacent the other of said edges,

elongated insulation members having two elongated edges and positioned in each of said siding panels, said insulation members extending between said first and second channel means and having their edges positioned therein, said insulation members being disposed in spaced, substantially parallel relationship to said surface of said building and to said outer wall members of said siding panels,

a plurality of first air chambers formed between said outer wall member of the siding panels and said insulation members,

a plurality of second air chambers formed between said insulation members and said surface of said building,

means positioned in said second air chambers for securing said siding panels to said building, said means not being in contact with said insulation members, with said outer wall members of said siding panels, or with said outside ambient environment,

means for interconnecting adjacent siding panels together to form a layer of siding on said surface of said building, and

means for placing said plurality of second air chambers in fluid communication with one another and in fluid communication with the ventilation system of said building.

4,327,529

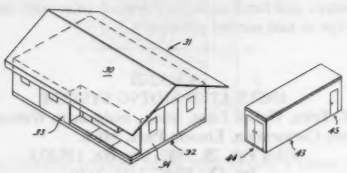
PREFABRICATED BUILDING

Floyd E. Bigelow, Jr.; Floyd E. Bigelow, III, and William H. Bigelow, all of P.O. Box 7064, Houston, Tex. 77008

Filed Sep. 20, 1979, Ser. No. 76,983

Int. Cl.³ B65D *85/00*; E04H *1/02*

U.S. Cl. 52—34 **3 Claims**



1. A prefabricated building comprising:

a plurality of exterior and interior wall sections joined together in a selected configuration;

a plurality of ceiling panels extending between said walls;

a plurality of roof trusses overlying said ceiling panels;

a roof supported by said trusses;

a utility core comprising:

a plurality of vertical connected core walls extending vertically,

one of said core walls providing an exterior wall of said building,

an access door in said one wall,

a main sewer line supported in said core and extending through said one core wall and having a plurality of lateral sewer lines extending through said core walls,

a main water line extending through said one core wall and supported in said core and having a plurality of lateral water lines extending through said core walls,

a water heater in said core connected to said main water line,

a main hot water line connected to said heater and having a plurality of lateral hot water lines extending through said core walls,

a breaker box in said core,

a plurality of electrical conduits extending from said breaker box,

said core prefabricated prior to erection of said building; and

fixtures utilizing water and discharging sewage connected to selected one of said lateral lines.

4,327,530

ENCLOSURE FOR ELECTRONIC EQUIPMENT

Jeffrey L. Bush, Denville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 31, 1979, Ser. No. 108,970

Int. Cl.³ E04B *1/346*

U.S. Cl. 52—66 **5 Claims**

1. A weatherproof enclosure comprising

a base,

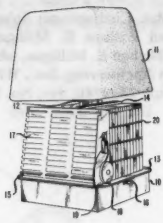
a gasket extending around the periphery of said base,

a mushroom-shaped hood,

centrally located means for raising and lowering said hood to expose the surface of said base when raised and to mate with said gasket when lowered,

a spring-loaded lifting mechanism extending between said base and said hood,

a counterweight pivotally mounted to said lifting mechanism, and



a fulcrum for counterbalancing said counterweight when said hood is in the raised position.

4,327,531

STORAGE TANK CONSTRUCTION

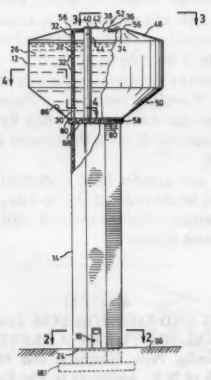
Laurence G. Cazaly, 82 Green La., Thornhill, Ontario, Canada (L3T 2A1), and Douglas Lamon, 494 Wentworth St. N., Hamilton, Ontario, Canada (L8L 5W9)

Filed Jun. 9, 1980, Ser. No. 157,566

Claims priority, application Canada, May 3, 1979, 326868

Int. Cl.³ E04H *12/30*

U.S. Cl. 52—73 **24 Claims**



1. A tower for the elevated storage of liquids, such as water, the tower comprising:

an upright, hollow, cylindrical shell adapted to be anchored to a supporting base foundation, the shell having an upper distal portion defining a plurality of peripheral openings spaced below the top of the shell;

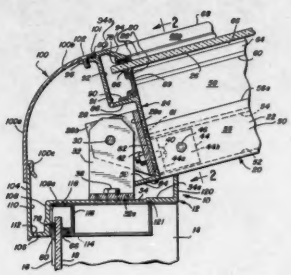
a tank mounted at the upper distal portion of the shell, the tank having a lower skirt defining a generally vertical opening, the shell distal portion extending through said opening so that the shell peripheral openings are adjacent to the skirt, the skirt including radially, inwardly projecting anchoring means; and

a continuous tank floor extending through the shell peripheral openings to the skirt to sealingly close said tank vertical opening, the floor engaging said anchoring means to support and retain the tank in position on the shell.

4,327,532
ADJUSTABLE ANGLE EAVE APPARATUS

Thomas E. Matthews, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Jul. 18, 1980, Ser. No. 170,031
Int. Cl.³ E04B 7/02
U.S. Cl. 52—92 21 Claims

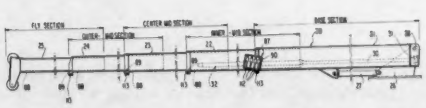


1. Adjustable angle eave apparatus comprising:
an elongated sill member forming a gutter for receiving moisture from a panelled wall structure extending angularly upwards of said member;
a wall structure including a frame having one or more rafters, and an elongated baffle member secured to the lower end of said rafter(s) extending along said sill member, and one or more panels supported from said frame;
bearing means for pivotally interconnecting said members to permit angular adjustment of the slope of said wall structure; and
an elongated sill cover for enclosing a space between an outer portion of said sill member and an upper portion of said baffle member above said sill member, said sill cover including an upper portion having an arcuately curved surface generated about an axis coextensive with a pivot axis of said bearing means and having an upper edge adapted to be sealed with said upper portion of said baffle member.

4,327,533
CRANE BOOM EXTENDING, RETRACTING AND COOPERATIVE LATCHING ARRANGEMENT

Russell L. Sterner, Greencastle, Pa., assignor to Kidde, Inc., Clifton, N.J.

Filed Aug. 13, 1980, Ser. No. 177,789
Int. Cl.³ B66C 23/04
U.S. Cl. 52—115 18 Claims

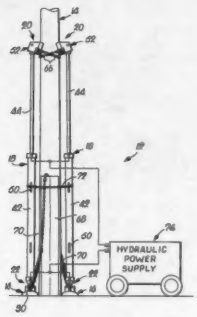


8. In a crane boom, a relatively stationary boom base section and a plurality of relatively movable boom sections which are telescopically nestable in the base section when retracted and extendable therefrom, means to fully extend and fully retract each movable boom section selectively to produce desired boom configurations, a locking mechanism common to all of the movable boom sections fixed on the boom base section near its forward end, movable locking elements carried by certain of the movable boom sections near their forward ends and being biased toward locking positions, with adjacent movable boom sections, the movable boom sections having locking receivers for said locking elements near their forward and rear ends, and power means on said locking mechanism operable to selectively retract the locking elements from their locking positions to enable the full retraction or full extension selectively of the movable boom sections by the first-named means.

4,327,534
METHOD AND APPARATUS FOR EXTENDING THE HEIGHT OF UTILITY POLES

Henry Mastalski, Centralia, and James T. Odom, Columbia, both of Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Jun. 26, 1980, Ser. No. 163,274
Int. Cl.³ E04G 23/06; E04H 17/26
U.S. Cl. 52—122 20 Claims



1. Apparatus for extending the height of an upright pole set in the ground comprising:
elongated pole reinforcers for placement in the ground alongside the pole and complemental thereto;
a number of ground-engaging supports adapted to receive the pole therebetween;
an extensible power device projecting upwardly from each support respectively; and
structure mounted on the upper end of each device respectively for releasably connecting the devices with the pole.

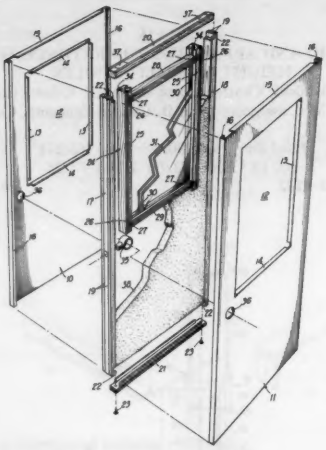
4,327,535
DOOR WITH GLASS PANEL

Bernard C. Governale, Duluth, Ga., assignor to Peachtree Doors, Inc., Norcross, Ga.

Filed Feb. 21, 1980, Ser. No. 123,393
Int. Cl.³ E06B 3/70, 3/36
U.S. Cl. 52—309.11 1 Claim

1. An entry door panel comprising a pair of opposing metal door skins having registering lite openings and having integral flanges around the margins of said openings projecting inwardly from the planes of said skins at right angles thereto, said skins having laterally opposing continuous inwardly opening integral channels along their vertical edges from top-to-bottom of the skins and disposed on the interior sides of the skins, the skins having integral right angular inwardly projecting horizontal flanges at least across their top edges, a marginal wood frame for the door panel including vertical stiles and top and bottom rails, said stiles having exterior side continuous parallel grooves receiving interior side flanges of said channels lockingly with the channels closely surrounding the corners of the frame stiles, at least the top rail of said wood frame having shallow recesses receiving said horizontal flanges therein, a prefabricated lite assembly comprising a lite panel and a surrounding lite panel frame locked thereto, the opposite faces of the lite panel frame having receptor grooves therein receiving said flanges of said skins around the margins of said openings lockingly, the interior opposing faces of the skin abutting the opposite faces of the marginal wood frame for the door panel

and the lite panel frame, such frames being of the same thickness between said skins, and a core of foam material filling the



space between said skins and surrounding the lite panel frame and inside of the marginal wood frame for the door panel.

4,327,536

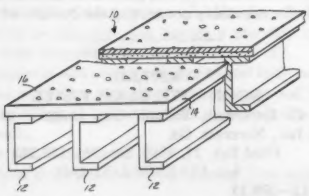
COMPOSITE BUILDING PANEL

Raymond R. Ascher, West Bloomfield, Mich., assignor to Linx Building Systems Corp., Southfield, Mich.

Filed Mar. 7, 1980, Ser. No. 128,295

Int. Cl.³ E04C *2/26*

U.S. Cl. 52—309.12 **12 Claims**



1. A composite building panel which comprises at least one metal reinforcing member; a layer comprised of glass fiber, said layer being fastened to said metal reinforcing member(s); and a three-dimensional, cross-linked polyester resin layer which abuts said fiberglass layer.

4,327,537

METHOD OF SEALING FORAGE PACKAGES

Milo Wolrab, Wayside Farms, Mount Vernon, Iowa 52314

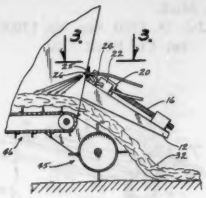
Division of Ser. No. 939,251, Sep. 5, 1978, Pat. No. 4,205,514. This application Aug. 16, 1979, Ser. No. 67,099

Int. Cl.³ A01D *39/00*

U.S. Cl. 56—1 **3 Claims**

1. A method of sealing a package of forage crops comprising:

applying a digestable sealing substance on at least the portion of such forage package that rain and snow would primarily fall and substantially omitting the application of said sealing substance on side portions of said forage package whereby air is not sealed out of said side portions of said forage package.



4,327,538

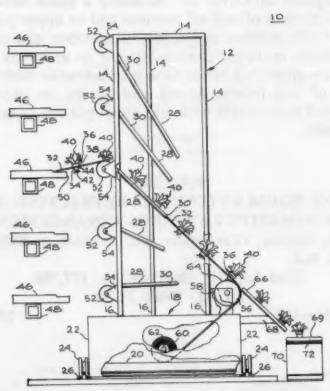
HARVESTER

Robert Milhem, Calabasas; Steven K. Eisenberg, Simi, and Mark W. Hancock, Los Angeles, all of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed Mar. 27, 1981, Ser. No. 248,085

Int. Cl.³ A01G *31/00*; A01D *57/02, 90/02*

U.S. Cl. 56—1 **8 Claims**



1. An improved harvester for harvesting hydroponically grown produce extending through openings in a flexible elongated strip along the length thereof, said harvester comprising, in combination:

a. a frame;

b. at least one elongated guideway comprising a pair of spaced parallel rails secured in said frame and adapted to guide a flexible strip having longitudinally spaced openings containing hydroponically grown produce extending down therethrough;

c. a strip guide secured to said frame;

d. means secured to said frame for separation of said produce from said flexible strip during passage of said strip through said frame; and,

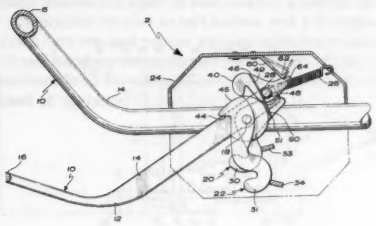
e. a strip take-up reel and means for powering said reel secured to said frame.

4,327,539

CONTROL SYSTEM FOR POWER EQUIPMENT

Thomas K. Bricko, Apple Valley, and Jeffrey B. Kallevig, Eden Prairie, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Dec. 16, 1980, Ser. No. 216,885
Int. Cl.³ A01D *75/20*
U.S. Cl. 56—113 **19 Claims**



1. An improved outdoor power equipment unit of the type having a housing; an active power driven element carried on the housing for performing a ground grooming action; and clutch means for selectively activating the active element, wherein the improvement comprises:

(a) a movable control member mounted on the housing and which is accessible to an operator for manual manipulation thereof, wherein the control member has a neutral position and is movable in two separate first and second directions therefrom; and

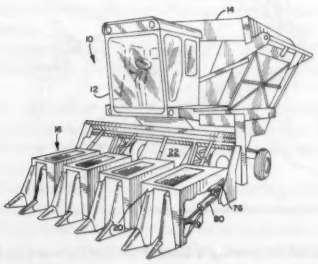
(b) means for activating the clutch means when the control member moves out of its neutral position in the first direction only when the control member has also first been moved from the neutral position in the second direction in a cocking type action, whereby the clutch means is operated by the control member only when the control member has first been cocked in the second direction before movement of the control member from the neutral position in the first direction.

4,327,540

HEADER HEIGHT CONTROL FOR A COTTON HARVESTER

William C. Swanson, Clarendon Hills, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 28, 1980, Ser. No. 210,983
Int. Cl.³ A01D *69/00*
U.S. Cl. 56—11.9 **11 Claims**



1. In a crop harvesting machine having a crop gathering device and a source of hydraulic fluid, the improvement comprising:

a plurality of independent pivotally mounted header units attached to said crop gathering device;

a number of positive displacement single acting lift cylinders attached at one end to said crop gathering device and at the other end to one of each of said pivotally mounted header units;

a two position control valve hydraulically communicating with said source of hydraulic fluid;

a rotary flow divider hydraulically communicating with said two position control valve and having relative to said lift cylinder number a like number of positive displacement sections;

a plurality of hydraulic ground elevation sensing units hydraulically communicating with one each of said number of positive displacement sections of said rotary flow divider and one each of said like number of positive displacement single acting lift cylinders, said hydraulic ground elevation sensing units metering hydraulic fluid flow to said single acting lift cylinders for controlling the position of the individual pivotally mounted header units concerned; and

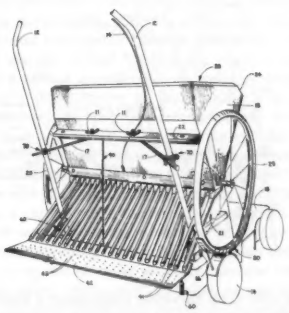
a return line providing hydraulic fluid communication from each of said hydraulic ground elevation sensing units to said source of hydraulic fluid enabling the equally divided flow as it is supplied from each of the number of positive displacement flow divider sections to be handled by the combined consumption of that positive displacement single acting cylinder and sensing unit associated with that particular section.

4,327,541

UNIVERSAL LAWN SPREADER ATTACHMENT FOR LAWN MOWERS

Edward P. Emory, Lake Charles, La.

Filed Feb. 12, 1980, Ser. No. 120,928
Int. Cl.³ A01D *19/00*
U.S. Cl. 56—16.8 **11 Claims**



1. A spreader attachment, for wheeled lawnmowers with a rearwardly extending handle for manipulation of the lawnmower by the user, for dispensing fertilizer and the like on the ground in association with the lawnmower, comprising:

hopper means, including associated flow control means for controlling the flow of fertilizer from said hopper means to the ground, for mounting on top of the lawnmower in front of and above the lawnmower handle and for holding the fertilizer prior to dispensing the fertilizer to the ground;

mounting connector means attachable to said hopper means for mounting said hopper means on and connecting it to the lawnmower for transport across the ground in association with the lawnmower;

drive wheel means connected to said flow control means for engaging at least one wheel of the lawnmower as a source of motive power and for rotationally driving said flow control means in response to the movement of the engaged lawnmower wheel;

fertilizer distribution means connectable to said hopper means for extending down from said hopper means at the

back of the lawnmower and at least in part in the central, back area of the lawnmower down to an area adjacent the ground level and behind the lawnmower housing; and

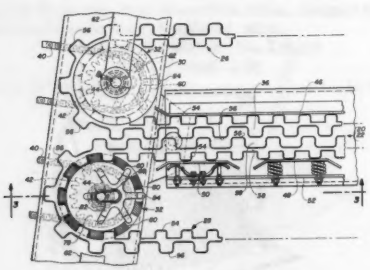
separate handle locking accessory means for locking the lawnmower handle in position with respect to the rest of the lawnmower, the lawnmower including a handle which is pivoted at its lower end for upward, forward movement and a housing having a rear, downturned, lower lip, said handle lock means comprising an elongated member connectable between the handle of the lawnmower and the lower, rear lip of the lawnmower housing, said elongated member being inextendible when said handle lock means is in operative disposition on the lawnmower between the handle and the lower, rear lip of the lawnmower housing preventing any upward, forward movement of the handle.

4,327,542

ROW CROP HARVESTER WITH SELF-CLEANING BELT FEED

Robert M. Van Ginhoven, Lancaster, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Apr. 8, 1981, Ser. No. 252,098
Int. Cl.³ A01D *45/02*
U.S. Cl. 56—98 **10 Claims**



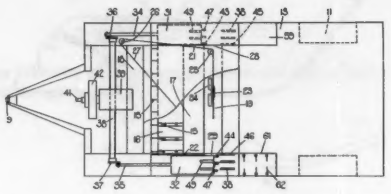
1. A row crop harvester comprising a mobile frame having a forward end portion, a cutterhead on the forward portion of said frame, means defining elongated crop receiving paths extending rearwardly from said cutterhead to guide cut crop material rearwardly therefrom, at least partially parallel guideways extending along opposite sides of said paths, pairs of coacting endless configurations on the outer surfaces positive crop engaging configurations on the outer surfaces thereof and spaced drive lugs on the inner surfaces thereof, the belts respectively having substantially straight crop feeding spans thereon movable along opposite sides of said guideways to receive and engage crop material between said spans, pairs of rotary belt support and drive members mounted respectively adjacent opposite end portions of said paths and around which said belts extend, power means connected to one drive member of each pair of belt supports, complementary co-engaging configurations on the surfaces of said rotary members receiving said drive lugs on said belts to effect positive drive of said straight spans of the belts, and self-cleaning members for said complementary configurations of said rotary members mounted adjacent the same and operable to clear said configurations of any extrameous material accumulated therein.

4,327,543

AGRICULTURAL MACHINE

Ian Currie, and Tom McMaster, both of Garvagh, Ireland, assignors to Archie Kidd Limited, Devizes, England

Filed Aug. 25, 1980, Ser. No. 180,978
Claims priority, application United Kingdom, Aug. 31, 1979, 7930316
Int. Cl.³ A01D *43/02*
U.S. Cl. 56—344 **28 Claims**



1. An agricultural machine for picking up and chopping crop comprising:

a device for picking up crop from ground over which the machine is travelling;

at least one chamber to which the crop is delivered from said picking up device, said chamber having an entry opening and a discharge opening;

stationary knives are mounted near said discharge opening;

a reciprocable ram in said chamber movable from a position in which crop can enter the chamber through the entry opening to a position towards the stationary knives, said chamber, knives and ram comprising a means for chopping the crop up;

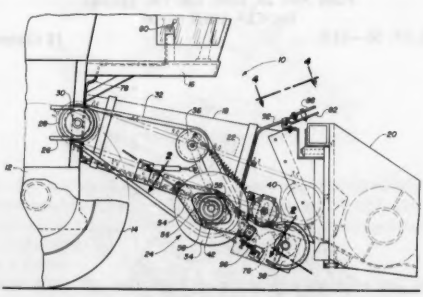
and a collector into which the crop is discharged from the discharge opening of the chamber.

4,327,544

VARIABLE SPEED INDICATOR FOR COMBINE

James W. McDuffie, and Larimer J. Knepper, both of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed May 6, 1981, Ser. No. 260,949
Int. Cl.³ A01D *41/06, 69/00*
U.S. Cl. 56—10.2 **5 Claims**



1. A combine having a header on the forward end thereof, a feeder house rearwardly of the header to receive cut crop material and elevate it to the inlet of the threshing chamber of the combine, a cab mounted above said feeder house, a vari-drive sheave supported by said feeder house at one side thereof, an engine mounted upon said combine, drive transfer means between said engine and vari-drive sheave, an auxiliary motor, a yoke pivoted at one end relative to said feeder house, means connecting said yoke to one of the flange members of

said vari-drive to move the same toward and from the other flange member to vary the drive speed provided by said vari-drive to movable members on said combine, and adjusting means operated by said auxiliary motor and connected to the other end of said yoke to move the same and effect movement of said one of said flange members as aforesaid, in combination with speed-indicating means comprising a bracket carried by said feeder house in viewing position from said cab, speed-indicating indicia on a plate on said bracket, a pointer movable upon said bracket relative to said indicia, and a Bowden cable connected between said pointer and said adjusting means operated by said auxiliary motor to vary the position of said pointer proportionately to the speed of said vari-drive which controls the speed of operation of the combine.

4,327,545

APPARATUS FOR MAKING A YARN

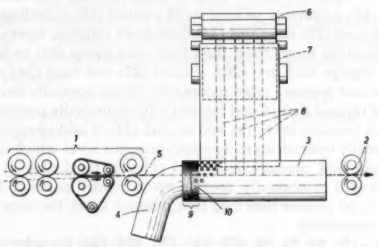
Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria

Filed Jul. 14, 1980, Ser. No. 168,294

Claims priority, application Austria, Jul. 27, 1979, 5185/79; Jan. 3, 1980, 20/80

Int. Cl.[3] D01H *1/12;* D02G *3/36*

U.S. Cl. 57—5 3 Claims



1. In apparatus for making a yarn, comprising

two closely juxtaposed suction drums operable to rotate in the same sense and having suction zones which define a generally triangular space,

a drawframe for supplying a roving to one end of said triangular space,

withdrawing means for withdrawing a yarn formed from said roving from the other end of said triangular space, and

means for delivering covering fibers to a predetermined length zone of said triangular space in a direction which is transverse to said drums to cause said roving to be covered with said covering fibers,

the improvement of twisting means for twisting said roving between said drawframe and said predetermined length zone of said triangular space, said twisting means comprising two rings rotatable on parallel axes and operable to rotate in the same sense, the rings having rough outside peripheral surfaces which define a substantially triangular, tapering space and being air-permeable in at least part of their axial extent, and further comprising

a suction device operable to suck air through said peripheral surfaces of said rings to pull said roving supplied to said tapering space into contact with said rough surfaces of said rings.

4,327,546

METHOD AND APPARATUS FOR JOINING A THREAD

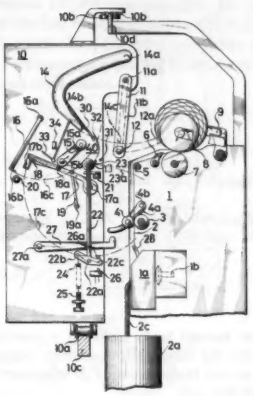
Josef Derichs, and Hans Raasch, both of Mönchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,348

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1978, 2850729

Int. Cl.[3] D01H *15/02*

U.S. Cl. 57—263 7 Claims



1. Method for joining a thread returned by a traveling joining device from a take-up coil to a spinner rotor of an open-end rotor spinning machine station including a thread pulling device of the joining device being shiftable in forward direction for moving the thread toward the take-up coil and in reverse direction for moving the thread toward the rotor, a thread accumulator and a thread transfer device, which comprises shifting the thread pulling device of the joining device into reverse motion, inserting the thread accumulator into the path of the thread between the thread pulling device and the take-up coil, subsequently shifting the thread pulling device into forward motion at the instant of joining, taking the thread from the pulling device with the thread transfer device, and transferring the thread to a thread guide of the spinning station.

3. Apparatus for carrying out the method of joining a thread returned by a traveling joining device from a take-up coil to a spinner rotor of an open-end rotor spinning machine station, comprising thread pulling means being disposed on said joining device and being shiftable into reverse motion for returning the thread to the spinner rotor, a thread support disposed on the spinning station, means for transferring thread after joining from said thread pulling means to said thread support, and a thread accumulator insertable into the path of the thread between said thread pulling means and the take-up coil forming a thread loop before joining.

4,327,547

FUEL INJECTORS

Eric Hughes, Nuneaton; Denis R. Carlisle, Risley, and Neville R. Holmes, Exhall, all of England, assignors to Rolls-Royce Limited, London, England

Filed Nov. 5, 1979, Ser. No. 91,574

Claims priority, application United Kingdom, Nov. 23, 1978, 45863/78

Int. Cl.[3] F02C *7/22*

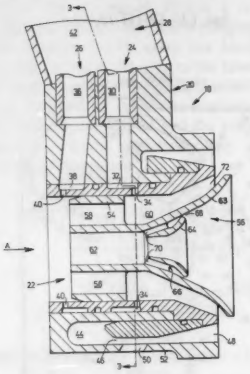
U.S. Cl. 60—39.46 P 10 Claims

1. A gas turbine fuel injector comprising:

a first body including liquid fuel duct means and gaseous fuel duct means;

a hollow second body positioned within said first body, said

first and second bodies defining therebetween a first annular flow passage for throughflow of compressed air, said first annular flow passage being in communication with said liquid fuel duct means, and said first annular flow passage terminating in a downstream end portion for accelerating flow of fluid therein and therefrom;



said hollow second body defining a central second flow passage for the throughflow of only compressed air, said hollow second body having a downstream end defining a main diffuser; and

flow directing means in said second flow passage of said hollow second body for directing flow of compressed air onto the interior surface of said main diffuser to wash the same and decrease carbon buildup thereon.

4,327,548

GAS TURBINE ENGINE POWER PLANT

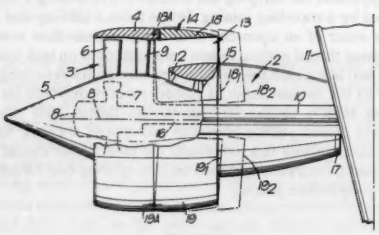
Clifford S. Woodward, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Feb. 26, 1980, Ser. No. 124,734

Claims priority, application United Kingdom, Mar. 10, 1979, 08504/79

Int. Cl.³ F02K *3/06*

U.S. Cl. 60—226 A **8 Claims**



1. A gas turbine powerplant for aircraft propulsion comprising, a flow duct for propulsive fluid, an exhaust nozzle connected to the downstream end of said duct, a first axis being a common longitudinal axis of said duct and said nozzle, said nozzle comprising two substantially semi-cylindrical shells each having two longitudinal edges lying in a common plane, the longitudinal edges of the one shell confronting the corresponding edges of the other shell, fixed structure adjacent to said edges, guide means connecting said shells at said edges, at locations spaced apart therealong, to said fixed structure and cooperating to guide said shells for angular motion about respective second axes extending at the periphery of said shells tangentially thereto, and operating means for imparting said angular motion to said shells.

4,327,549

CONTROLLED PRESSURE UPSTAGING AND FLOW REDUCTION

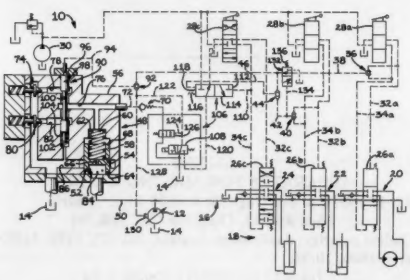
Donald L. Bianchetta, Coal City, and Sammy J. Rhodes, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00735, § 371 Date Sep. 17, 1979, § 102(e) Date Sep. 17, 1979, PCT Pub. No. WO81/00742, PCT Pub. Date Mar. 19, 1981

PCT Filed Sep. 17, 1979, Ser. No. 127,152

Int. Cl.³ F15B *11/16, 13/06;* **F16H** *39/46*

U.S. Cl. 60—426 **8 Claims**



1. In a hydraulic system (10) having a variable displacement pump (12), a plurality of fluid work circuits (18) including first (20), second (22) and third (24) fluid work circuits, means (16) for delivering pressurized fluid from said pump (12) to selectively engage said first (20), second (22) and third (24) work circuits and pressure relief means (70, 74) for normally limiting each of (a) said first of said circuits (20) to normally operate up to a first pressure level, (b) said second (22) of said circuits (18) to normally operate up to a second pressure level which is less than said first pressure level and (c) said third (24) of said circuits (18) to normally operate up to a third pressure level which is no greater than said first pressure level, the improvement comprising:

means (80, 92, 94, 98, 108, 120, 122, 124, 126) for selectively operating said third circuit (24) at an upstaged pressure level which exceeds said first pressure level: and

means (114) for preventing operation of said third circuit (24) at said upstaged pressure level in response to engagement of either one of said first circuit (20) and said second circuit (22).

4,327,550

THERMODYNAMIC MACHINE

Stellan Knöös, Rancho Palos Verdes, Calif., assignor to AGA Aktiebolag, Lidingö, Sweden, part interest

Filed Oct. 18, 1979, Ser. No. 86,053

Claims priority, application Sweden, Oct. 20, 1978, 7810957

Int. Cl.³ F02G *1/04*

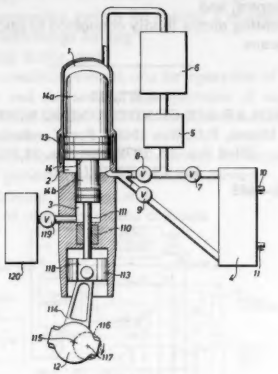
U.S. Cl. 60—522 **39 Claims**

1. A method of regulating a hot gas engine to generate a variable/mechanical power output in which the working medium is transferred between variable volume hot and cold gas chambers that vary cyclically in volume in inverse fashion, the transfer taking place during volume contraction of the hot gas chamber, the method comprising the steps of:

injecting working medium into the hot gas chamber at the start of expansion of the volume to maintain the pressure substantially constant at a working medium pressure for a selectively controllable interval during volume expansion of the hot gas chamber; and

maintaining a selected transfer pressure relationship at sub-

stantially constant pressure in the hot and cold gas chambers during a substantial part of the volume contraction of the hot gas chamber, the ratio between transfer pressure



and working medium pressure being variable up to substantially unity to provide variable power output including substantially zero work output.

4,327,551
MULTI-CYLINDER HOT-GAS ENGINE WITH AUTOMATIC AIR AND GAS SUPPLY

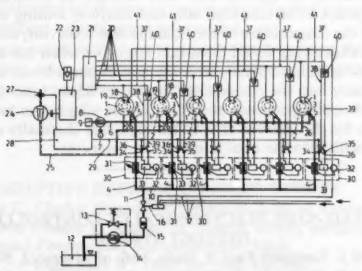
Joachim Grossmann, and Heinz Hoff, both of Augsburg, Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,883

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922603

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—524 **7 Claims**



1. A multicylinder hot gas engine in which each cylinder possesses a combustion chamber and a gas-heating chamber, and is provided with means for supplying fuel and air to said combustion chambers, for heating a working gas in the corresponding heating chamber, in quantities that are controllable in proportion by a control system in response to temperature changes of the working gas resulting from load changes of the motor, said engine comprising the improvement which consists in that:

in each heating chamber (2) a measuring device (19) is provided for monitoring the working gas temperature therein;

means (21) are provided for selecting the lowest working gas temperature measured in the various cylinders and for controlling in response thereto the air supply for all combustion chambers (1);

fuel supply control means (30) having a throttle valve (31) and an electrical valve setting mechanism (32,33) are interposed in each of the respective fuel supply lines (4) individually feeding the several combustion chambers (1);

means (28,29) are provided for supplying to each of said fuel supply control means (30) simultaneously a fuel control signal proportional to the quantity of air required by the combustion chambers, and

monitoring means (37,40) are provided for producing a reduction of the fuel throughput to said fuel control means (30) of each combustion chamber whenever the temperature in the corresponding heating chamber rises beyond a predetermined limit value.

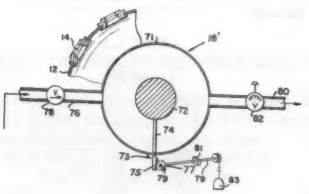
4,327,552
SOLAR HEAT APPARATUS

Joseph Dukess, 931 Greacen Point Rd., Mamaroneck, N.Y. 10543

Continuation-in-part of Ser. No. 794,448, May 6, 1977, Pat. No. 4,166,769. This application Jul. 26, 1979, Ser. No. 60,720

Int. Cl.³ F03G *7/02*

U.S. Cl. 60—641.7 **6 Claims**



1. A solar energy device comprising:

a fluid heater including an expansible and contractible member adapted to be exposed to the sun,

means connectable to a source of fluid outside the device for introducing relatively cold fluid to be heated into the member wherein the fluid is heated by solar energy,

means for withdrawing heated fluid from the member and allowing it to escape therefrom,

the member expanding in response to the heating of fluid within it and contracting in response to the introduction of relatively cold fluid into it, and

means for transmitting the expansions and contractions of the member to a work-performing mechanism.

4,327,553
GAS POWERED MOTORS

John W. Rilett, The Gables, Hawkers Hill, Bibury, Gloucestershire, England

Filed Sep. 4, 1979, Ser. No. 72,561

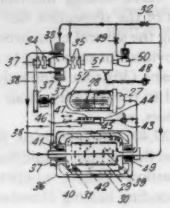
Claims priority, application United Kingdom, Sep. 5, 1978, 7835603

Int. Cl.³ F01K *25/06*

U.S. Cl. 60—673 **23 Claims**

1. A gas powered motor having: means for holding liquified gas; conduit means to deliver gas from the holding means to the motor to power the motor; receiving means for expanded gas from the motor; further conduit means for delivering expanded gas from the motor to the receiving means; solid condensing buffer means in the receiving means which associate exothermically with and upon receipt of expanded gas to condense and hold the gas and release heat therefrom; heat exchange means for heat exchange between the first conduit means and said solid condensing buffer means for superheating the gas flowing through the conduit means to the motor by the

heat released from the expanded gas; and means to subject the receiving means to reduced pressure to extract the condensed gas therefrom and to return the extracted gas to the holding means.



4,327,554

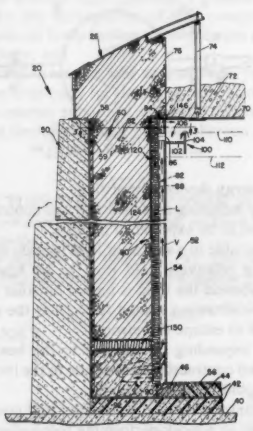
SPILL CONDITION VENTING SYSTEM

Ulhas S. Patil, Pittsburgh; Harold F. Honath, Coraopolis, and John C. Murphy, Pittsburgh, all of Pa., assignors to Pittsburgh-Des Moines Corporation, Pittsburgh, Pa.

Filed Dec. 13, 1979, Ser. No. 103,525

Int. Cl.[3] F17C 7/02; B65D 7/22

U.S. Cl. 62—45 **38 Claims**



1. In a double wall tank for the storage of low temperature fluids, including an inner wall defining an inner tank, an outer wall, and an annular space between the inner and outer walls of the tank substantially filled with granular insulating materials, a control system for controlling in the event of a spill into the annulus, flow of stored fluid into and out of said annulus and for controlling and directing vapors resulting therefrom including:

at least one conduit located in the annulus and having an inlet fluidly connected to the inner tank at an overflow level of the inner tank and an outlet end located in and fluidly communicating with the annulus, said conduit controllably directing the spilled liquid down the tank and into the annulus at the bottom of the annulus;

vapor channel defining means located in the annulus and having an inlet fluidly connected to an outlet of said conduit via the annulus, said vapor channel defining means defining at least one vapor channel for directing the vapor generated from the spilled liquid in the bottom of the annulus to the top of the annulus, said channel defining means including means filtering said vapor flowing in said vapor channel, and preventing flow of granular insulation into said vapor channel;

vapor directing means located in said vapor channel for directing the flow of said vapors out of the annulus at the top thereof; and

vapor venting means fluidly connected to said vapor directing means.

4,327,555

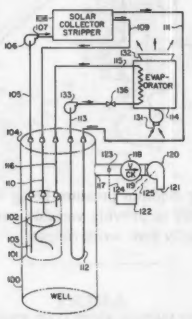
SOLAR AIR CONDITIONING SYSTEM

Donald F. Dimon, P.O. Box 15607, Fort Lauderdale, Fla. 33318

Filed Sep. 10, 1979, Ser. No. 74,011

Int. Cl.[3] F25B 15/00

U.S. Cl. 62—485 **9 Claims**



1. For use with a cooling liquid reservoir, said reservoir having an inlet connected to a supply of cool liquid for replenishing the reservoir as liquid is removed therefrom; An absorber adapted to be immersed in the cool liquid in said reservoir, said absorber comprising inlet means to permit entry of vaporized refrigerant; inlet means to permit entry of mixture of absorbent and refrigerant; outlet means to permit removal of a mixture of refrigerant and absorbent; a chamber with which said inlet and outlet means communicate, said chamber having thermally conductive walls; means within said chamber for introducing refrigerant into said mixture of absorbent and refrigerant to be absorbed into said mixture; sensing means to sense the temperature of the liquid in said reservoir; and means for withdrawing liquid from said reservoir when the temperature of said liquid rises above a predetermined level, allowing the entry into the reservoir of fresh cool liquid from said supply of cool liquid; said absorber further adapted to be cooled solely by the transfer of heat through said thermally conductive walls into the cool liquid in the reservoir.

4,327,556

FAIL-SAFE ELECTRONICALLY CONTROLLED DEFROST SYSTEM

Joseph J. Zampini; Paul R. Buda, both of Liverpool, N.Y., and Luis E. Prada, Louisville, Ky., assignors to General Electric Company, Syracuse, N.Y.

Filed May 8. 1980, Ser. No. 147,830

Int. Cl.[3] F25D 21/06

U.S. Cl. 62—153 **11 Claims**

1. In a self-defrosting refrigerator, the combination comprising:

(a) a refrigeration system including an evaporator for cooling the refrigerator interior by evaporation of a circulating coolant, said evaporator being subject to frost build-up during cooling,

(b) first and second input terminals for connection of said refrigerator to a source of electrical energy,

(c) an electrically powered motor driven compressor for circulating coolant through said refrigerator system,

(d) a thermostat having contacts for turning on or turning off

the compressor motor to maintain the refrigerator temperature at a desired value,

(e) a defrost heater for removing frost build-up from said evaporator,

(f) a time responsive switch for setting a minimum period between defrostings having

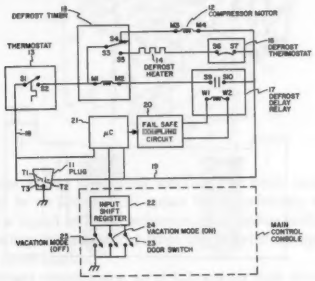
(1) a timing motor, and

(2) a two condition switch, one for operation of said compressor and the second for operation of said defrost heater, as a function of the duration of timing motor energization,

(g) a normally closed defrost delay relay for extending said minimum period between defrostings having:

(1) an operating winding, and

(2) a pair of normally closed contacts



which open when said operating winding is suitably energized,

said thermostat contacts, said timing motor, and defrost delay relay contacts being serially connected between said first and second input terminals for energization of said timing motor only when both thermostat and defrost delay relay contacts are closed,

(h) an electronic decision element responsive to input information supplied thereto for determining the period between defrostings beyond said minimum period, said decision element producing an output signal having a duration dependent on said input information, and

(i) means coupling the output signal of said decision element to said relay operating winding for opening said relay contacts to achieve said extension.

4,327,557

ADAPTIVE DEFROST CONTROL SYSTEM

Clarence C. Clarke; Stephen W. Paddock, both of Evansville, Ind., and Donald E. Knoop, St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 30, 1980, Ser. No. 155,154

Int. Cl.³ F25D *21/06*

U.S. Cl. 62—153 **36 Claims**

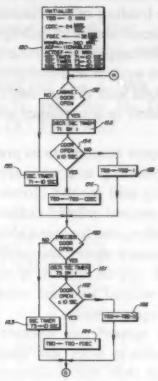
1. In a cooling system having a defrost device and cooled compartment accessible through a door, a defrost control for energizing the defrost device, comprising:

door sensing means for detecting an initial open period for said door and a subsequent open period when said door remains open beyond said initial open period;

control means for energizing said defrost device at the end of an interval determined at least partly by the cumulative open period of the door, including:

first advance means for advancing toward the end of the interval at a first rate in response to the initial open period to compensate for increased frost occurring during the initial door open period, and

second advance means for advancing toward the end of the interval at a second rate less than said first rate in response



to the subsequent open period to compensate for lesser frost occurring during the subsequent open period.

4,327,558

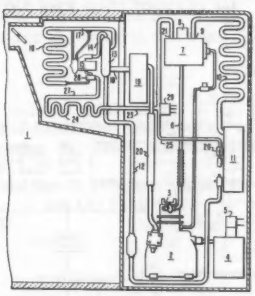
UNLOADABLE TRANSPORT REFRIGERATION UNIT CONTROL

Leland L. Howland, Belle Plaine; Hendrie J. Grant, St. Paul, and David H. Taylor, Bloomington, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Sep. 17, 1980, Ser. No. 188,170

Int. Cl.³ F25B *13/00, 1/00*

U.S. Cl. 62—160 **3 Claims**



1. The combination of:

a transport refrigeration unit including prime mover means driving a multi-cylinder, unloadable compressor adapted to operate in a cooling mode, or alternatively in a heating and defrost mode, in accordance with the positioning of a three-way valve receiving hot gas discharged by said compressor, said valve having its one outlet connected to a refrigerant condenser and its other outlet connected to a hot gas line extending to a refrigerant evaporator, said hot gas line in a cooling mode having a pressure reflecting the evaporator pressure, and in a heating and defrost mode having a pressure corresponding generally to the gas discharge pressure;

with a control system including:

switch means responsive to the refrigerant pressure in said hot gas line;

first circuit means including a first solenoid for controlling

the loading of at least one of the cylinders of said compressor;

second circuit means including a second solenoid for controlling the loading of the remainder of the cylinders;

each of said circuit means including switch means responsive to changes in temperature of the space conditioned by said refrigeration system and independently operable to positions to unload said at least one cylinder and said remainder of cylinders in accordance with demand conditions of said space;

said switch means responsive to pressure having a first position corresponding to a pressure below a predetermined value placing said second circuit means in a condition in which said second soleoid causes loading of said remainder of cylinders, and having a second position corresponding to a pressure above the predetermined value placing said second circuit means in an opposite condition in which said second solenoid causes unloading of said remainder of cylinders;

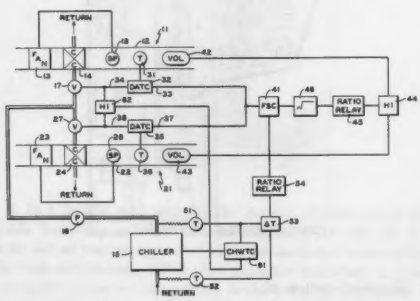
whereby said system can operate in a cooling mode in loaded condition with gas discharge pressures significantly higher than said predetermined value.

4,327,559

TRANSPORT AND CHILLER ENERGY MINIMIZATION FOR AIR CONDITIONING SYSTEMS

Donald H. Spethmann, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 2, 1981, Ser. No. 239,792
Int. Cl.[3] F25D *17/00*; F24F *7/00*
U.S. Cl. 62—179 **22 Claims**



1. A control system for minimizing the total energy consumed by the transport system and chiller of a building's air conditioning system, said air conditioning system comprising at least one fan system having a cooling coil supplied by the chiller and a fan for transporting treated air through a duct, said control system comprising:

transport energy sensing means for sensing the energy expended in transporting said treated air through said duct;

chiller energy sensing means for sensing the energy expended by said chiller; and,

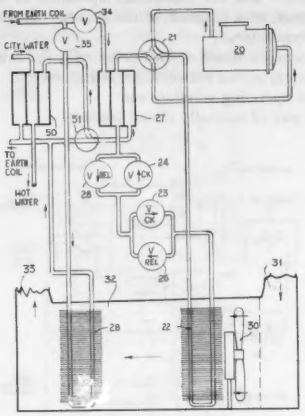
control means responsive to said transport energy sensing means and said chiller energy sensing means and adapted to be connected to said air conditioning system for minimizing the total energy consumed by said transport system and said chiller.

4,327,560

EARTH-EMBEDDED, TEMPERATURE-STABILIZED HEAT EXCHANGER

Harry I. Leon, and Vivian L. Leon, both of 924 Bowen St., NW., Atlanta, Ga. 30318

Filed Jun. 3, 1980, Ser. No. 156,123
Int. Cl.[3] F25D *23/12*; F25B *13/00*
U.S. Cl. 62—260 **7 Claims**



1. In a system for heating and air conditioning a structure in which thermal energy is exchanged between the structure and the earth, the system having a first closed circuit in thermal contact with a second closed circuit in a heat exchange zone; the heat exchange zone embodying a fluid-to-refrigerant charge heat exchanger; the first closed circuit having a compressor for circulating a refrigerant charge through the heat exchanger and through an air conditioning coil; a means including said coil and a fan for distributing heated or cooled air to a conditioned space within the structure; the first closed circuit further including a 4-way valve in series with the compressor, the heat exchanger and the coil whereby in one mode of the valve the heat exchanger functions as an evaporator and the coil functions as a condenser; and in the other mode the functions are reversed; the second closed circuit including a passageway of the heat exchanger, an underground pipe having a heat conductive portion, and a pump for circulating a heat transfer fluid through the passageway and the underground pipe; wherein the improvement comprises:

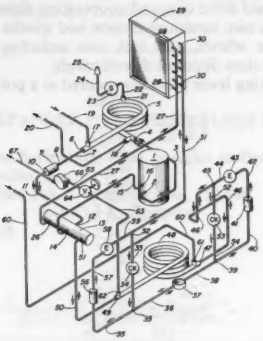
a temperature-stabilized heat exchanger which is embedded in the earth, the heat exchanger having a hermetically-sealed enclosure which jackets a section of the heat conductive portion; the thickness of the walls of the enclosure being at least as great as that of the wall of said section; a composition which upon crystallization releases latent heat in the amount of approximately 100 BTUs per pound and which is contained within the enclosure, the transition temperature of the composition being approximately 10° F. below the average winter temperature of the undisturbed soil at the depth at which the temperature stabilized heat exchanger is embedded, so that a large amount of thermal energy can be stored in close proximity to said heat transfer fluid, thereby protecting the environment in the vicinity of said section against the effects of extremely low temperatures when heating of the structure is required; the enclosure having a large surface-to-volume ratio and having its outer walls in thermal contact with the soil, so that the composition can be restored to its liquid state by thermal energy transfer from the earth to the composition when the heating requirements are low.

4,327,561

HIGH COEFFICIENT OF PERFORMANCE HEAT PUMP

G. Russell McNeal, 1929 N. Osage, and Joseph R. McNeal, 1308 Bradbary, both of Ponca City, Okla. 74601

Filed Jun. 20, 1980, Ser. No. 161,458
Int. Cl.[3] F25B *13/00*
U.S. Cl. 62—324.1 13 Claims



1. A heat pump apparatus suitable for both heating and cooling air in an interior air space by transferring heat with respect to a liquid in heat exchange relationship with an environment otherwise separated from the interior air space comprising in combination:

a refrigerant compressor, a refrigerant-air heat exchanger, a first refrigerant-liquid heat exchanger with means for communicating the liquid in heat exchange relationship with the environment separated from the interior air space, refrigerant, a first refrigerant expansion means, a second refrigerant expansion means, a first check valve means, a second check valve means, a first filter-dryer means, a second filter-dryer means, a three way valve means, and a plurality of refrigerant conduit means;

connected in fluid tight communication and suitable such that:

(a) the compressed, heated, and liquified refrigerant outlet of the refrigerant compressor connects via a first refrigerant conduit means to the inlet of the three way valve means;

(b) the outlet of the three way valve means connects via a second refrigerant conduit means back to the evaporated and cooled refrigerant inlet of the refrigerant compressor;

(c) the first alternate path opening of the three way valve, which is the heating mode (for the air) outlet and the cooling mode (for the air) inlet, connects via a third refrigerant conduit means to the first refrigerant opening (inlet for the heating mode and outlet for the cooling mode) of the refrigerant-air heat exchanger situatable in the interior air space;

(d) the second refrigerant opening (outlet for the heating mode and inlet for the cooling mode) of the refrigerant-air heat exchanger connects via a fourth refrigerant conduit means; and then through a first path in one direction, comprising the first (open) check valve means, the first filter-dryer means, and the first refrigerant expansion means; and through a second path in the opposite direction, comprising the second (open) check valve means, the second filter-dryer means, and the second refrigerant expansion means; to the refrigerant opening (heating mode inlet and cooling mode outlet) of the refrigerant-liquid heat exchanger via a fifth refrigerant conduit means, the refrigerant-liquid heat exchanger having means for communicating the liquid thereof in heat exchange relationship with the external environment separated from the interior air space;

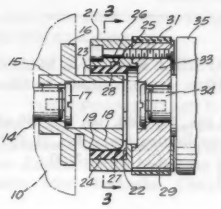
(e) the second refrigerant opening of the refrigerant-liquid heat exchanger (the heating mode outlet and the cooling mode inlet) connects via a sixth refrigerant conduit means to the second alternate path opening of the three way valve, which is the heating mode (for the air) inlet and the cooling mode (for the air) outlet thereof.

4,327,562

FLEXIBLE COUPLING

Robert E. Gottschalk, Los Angeles, Calif., assignor to Panavision, Incorporated, Tarzana, Calif.

Continuation of Ser. No. 949,152, Oct. 6, 1978, abandoned. This application May 21, 1980, Ser. No. 151,805
Int. Cl.[3] F16D *3/68*
U.S. Cl. 464—75 1 Claim



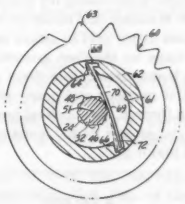
1. A flexible vibration-dampening coupling for connecting a driving member to a driven member, comprising in combination: one of the members comprising a hub having axially extending fins projecting radially outward, each fin being provided with a crowned outer surface extending axially, the other member comprising a sleeve having a series of circumferentially spaced internal pockets, a continuous liner formed of elastomeric material and fixed within said sleeve, said liner having a series of bulbous projections each received within one of said pockets, respectively, the finned member and the elastomeric liner defining clearances spaces between them in the regions between adjacent fins, each bulbous projection having an axially extending internal recess for axial reception of one of said fins, whereby said members may be separated axially through relative axial movement in which said fins slide out of said recesses.

4,327,563

TORQUE-LIMITING DRIVE COUPLING

Daniel S. Allmacher, Jr., 38531 Manchester, Mt. Clemens, Mich. 48043

Filed Nov. 7, 1979, Ser. No. 92,197
Int. Cl.[3] F16D *7/02*
U.S. Cl. 464—37 9 Claims



1. A torque-limiting drive coupling, comprising driving and driven means rotatable coaxially, one of said means having a substantially flat surface spaced from and parallel to the axis of rotation, means for rotating the driven means in response to rotation of the driving means when the driving torque is less than a predetermined value and for enabling continued rotation of the driving means independently of the driven means when said torque exceeds said predetermined value comprising a torque-transmitting leaf spring extending from end to end transversely of said axis and having an intermediate portion in

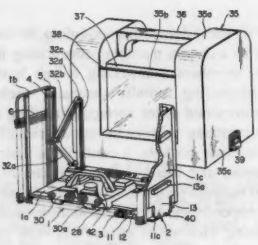
resiliently yieldable engagement with said flat surface, said flat surface and intermediate portion being in resiliently yieldable driving-driven engagement, the other of said means having surface portions confronting said axis, and means for maintaining said leaf spring in an operative position with respect to said driving and driven means and also for maintaining the engagement of said leaf spring adjacent its opposite ends at locations fixed circumferentially with respect to said surface portions comprising a pair of notches recessed into said surface portions adjacent the opposite ends of said leaf spring and having said opposite ends respectively confined therein, at least one of said ends being slidable endwise within its notch in response to flexing of said leaf spring during relative rotation between said driving and driven means.

4,327,564

COLLAPSIBLE KNITTING MACHINE

Masaru Kiuchi, Hino, Japan, assignor to Silver Seiko Ltd., Kodaira, Japan

Filed Jun. 16, 1980, Ser. No. 159,463
Claims priority, application Japan, Jun. 21, 1979, 54-84122[U]
Int. Cl.³ D04B *7/00*
U.S. Cl. 66—60 H **14 Claims**



1. A collapsible flat bed knitting machine, comprising a needle bed including a major part and at least one minor part, a carriage slidably mounted on said needle bed, and connector means for foldably connecting said minor part to a longitudinal end of said major part in an aligned, contiguously assembled position to form a straightened unitary needle bed, said connector means including a first substantially rectangular plate member fixed on the bottom of said major part and having an end thereof extending outwardly from said longitudinal end of said major part, said connector means further including a second substantially rectangular plate member fixed on the bottom of said minor part and receivable by said first plate member in telescopic relationship for limited sliding movement relative thereto to maintain said minor part in sufficiently exact alignment with said major part to assure smooth sliding movement of said carriage on the thus assembled needle bed, said second member being extractable from a position fully retracted to said first member and being pivotable, at the fully extracted position thereof, to a vertical position relative to said first member around an axis which is spaced from said longitudinal end of said major part.

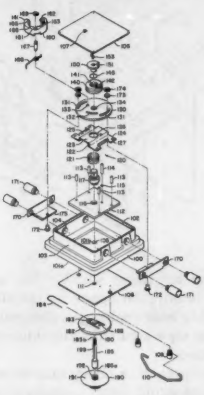
4,327,565

COMBINATION LOCK MECHANISM

Harold S. Mortin, 2014 Billy Glen, Escondido, Calif. 92025

Filed Jan. 14, 1980, Ser. No. 111,926
Int. Cl.³ E05B *37/08*
U.S. Cl. 70—303 R **14 Claims**

1. An improved combination lock mechanism, comprising:
(a) a substantially hollow door housing;
(b) a rotatable spindle directed into the interior of said housing, said spindle including at least one laterally extended member integrally formed upon one end thereof;
(c) a dial including at least one recess partially disposed therethrough engaging said extended member whereby to rotate said spindle;
(d) means for detachably securing said dial to said spindle;
(e) a drive cam, having a peripheral gate, secured to the opposite end of said spindle within said housing;
(f) a plurality of tumbler wheels, each of said wheels including a peripheral gate, surmounted upon said spindle proximate said drive cam and cooperating therewith;
(g) a lock cam surmounted upon said spindle proximate said tumbler wheels, said lock cam including a plurality of helical slots disposed therethrough;
(h) a locking lever pivotally secured at a point intermediate



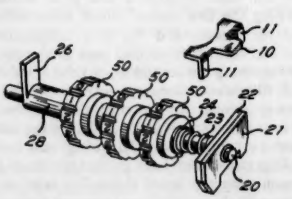
the opposite ends thereof to said lock cam, said lever including a first end adapted for engagement within said peripheral gates and a second end conforming to at least a portion of the peripheral geometry of said tumbler wheels;
(i) means for urging said first end of said locking lever into said peripheral gates;
(j) a plurality of locking bolt connective members;
(k) means, disposed through said helical slots, for slidably securing said locking bolt connective members to said lock cam; and
(l) means for relocking said connective members in a fully extended position whereby to inhibit locking bolt retraction.

4,327,566

LATCHING DEVICE AND COMBINATION LOCKING MEANS

Chong-Kuan Ling, Apt. 10-1, No. 9 La. 464, Tung-Hwa S. Rd., Taipei, Taiwan

Filed Jan. 21, 1980, Ser. No. 113,961
Int. Cl.³ E05B *37/02*
U.S. Cl. 70—312 **3 Claims**



1. In a combination lock comprising a face plate member having longitudinally spaced slots, dials positioned in said slots, a shaft, a sleeve for each dial mounted on the shaft, a spring means urging said sleeve in engagement with said dials,

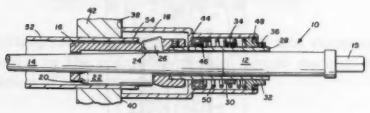
a spring plate, and a casing, the improvements comprising a latching piece provided with lug means inserted in between a movable plate slidably mounted on the shaft and a fixed plate securely fixed on the shaft, said movable plate being urged by the spring means against said fixed plate, the upper surface of said latching piece abutting on the back side of the face plate and being movable therealong when displaced by the eye piece of the hasp member at any combination.

4,327,567

TUBING EXPANDER FOR BOILER TUBES OR THE LIKE

Paul W. Martin, Springfield, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 7, 1980, Ser. No. 119,596
Int. Cl.³ B21D *39/06*
U.S. Cl. 72—119 **6 Claims**



1. A tubing expander for expanding tubing into tight sealing engagement with a tube sheet or the like and flaring the ends of such tubing projecting from the tube sheet, the expander comprising:

an elongated mandrel having a tapered portion thereon;

an annular expander cage encircling a portion of said mandrel, said expander having a plurality of spaced slots therein;

a plurality of generally straight expander rolls disposed in some of said slots;

a plurality of tapered flare rolls disposed in the other of said slots;

a hollow thrust member encircling a portion of said cage and mandrel and having an end engageable with the tube sheet;

an annular member on said cage within said thrust member and engageable with said thrust member to determine the initial position of said cage and expander rolls within the tubing; and,

a stop member mounted on said cage within said thrust member and engageable with said thrust member to limit the axial movement of said cage relative to said thrust member thereby controlling the depth of entry of the rolls into said tubing and the maximum flare of the tube ends.

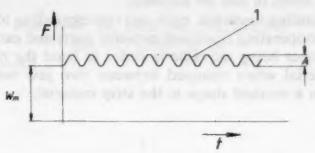
4,327,568

METHOD FOR THE COLD ROLLING OF PARTS

Garri Berstein, Erkelenz, Fed. Rep. of Germany, assignor to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Filed Mar. 21, 1980, Ser. No. 132,675
Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920889
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—199 **2 Claims**

1. The method of cold rolling metal parts with a positive rolling force which is characterized by applying to the part a force which pulsates at a frequency of from about 30 Hz to 300 Hz, the value of the minimum effective rolling force applied during such procedure corresponding essentially to a value of the minimum static force required to achieve a smooth rolling result, the amplitude of such force above said minimum varying from about 10% to 100% of said minimum force, the distance between successive pulse maxima being not greater than about twice the total pulse duration.

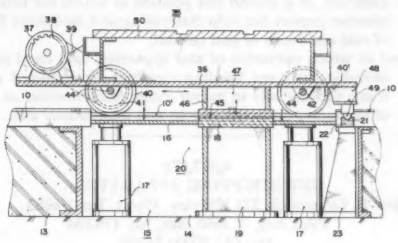


4,327,569

TUBE FORMING MILL

Yoichi Hamanishi, Aichi; Akiteru Honma; Iwao Nihashi, both of Toyotashi, and Seisuke Tanii, Okayama, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi and Kabushikikaisha Mori Tekkosho, Okayamaken, both of, Japan

Filed Mar. 31, 1980, Ser. No. 135,901
Int. Cl.³ B21B *31/08*
U.S. Cl. 72—239 **7 Claims**



1. A tube forming mill comprising: a means for changing rolls for the succeeding stages of a rolling process; rails directionally crossing a material feeding line at right angles thereto; unit rails provided at the crossing between the rails and the feeding line; an elevating mechanism disposed below the unit rails and acting upon the unit rails through a frame; a fixing mechanism arranged beside the elevating mechanism; a movable truck having a moving mechanism and adapted to travel on the rails; and a rolling mechanism mounted on the truck.

4,327,570

APPARATUS FOR BENDING STRIP MATERIAL INTO TOOTHED SHAPE

Willi Schöttker, Nordsehl, Fed. Rep. of Germany, assignor to P.A. Rentrop Hubbert & Wagner, Stadthagen, Fed. Rep. of Germany

Filed Apr. 25, 1980, Ser. No. 145,266
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917365
Int. Cl.³ B21D *11/04, 5/04*
U.S. Cl. 72—320 **7 Claims**

1. Apparatus for bending planar strip material into toothed shape, said apparatus comprising:

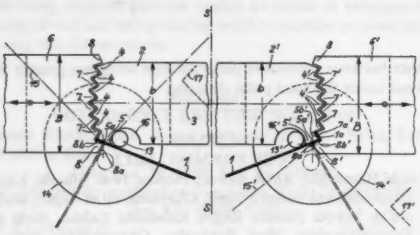
two fixed parts extending longitudinally along an axis and each being provided with a respective first bending jaw member;

two movable parts arranged for movement in alignment with the longitudinal axis of the respective said fixed parts and each being provided with a respective second bending

jaw member for co-operation with a corresponding one of the first bending jaw members;

sets of teeth provided on the opposing jaw members for engagement with one another with an outer flank of an end tooth of one set exposed;

two bending members, each one corresponding to each pair of cooperating fixed and movable parts and each bending member being movable in order to bend the planar strip material when clamped between two jaw members, to form a toothed shape in the strip material;



said apparatus operating so that each bending member is movable from first end position in which it is engageable with the planar strip material, while the latter is clamped between the corresponding pair of first and second jaw members, to a second end position in which the bending member presses the strip material against said outer flank of said end tooth of said one set;

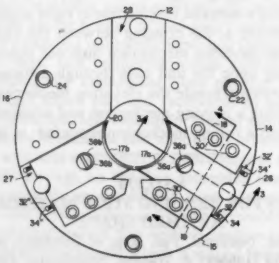
and in which operation of said apparatus, said fixed parts, movable parts and bending members are mounted on a frame substantially in mirror-image fashion about an axis of symmetry perpendicular to said longitudinal axis.

4,327,571

DIE STRIPPING APPARATUS

Walter B. Cavanaugh, 221 Hillview, Hurst, Tex. 76053

Filed Aug. 7, 1980, Ser. No. 176,034
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—344 **8 Claims**



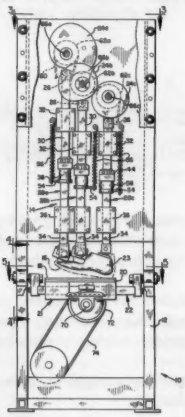
1. An improved die stripping apparatus of the type used in a can body forming apparatus wherein a punch forces a metal blank through a die by means of a ram, the improvement comprising: a platform located in a plane perpendicular to the punch, said platform having a die opening therein: means forming a plurality of channels in said platform, each of said channels having a longitudinal axis parallel with the plane of said platform and located on radii of said die opening; a corresponding plurality of segments slidably mounted in said channels; means for biasing said segments inward toward said die opening whereby said segments move outward from said die opening when the punch forces a metal blank through said die opening for forming the can body, and said segments secure the formed can body on the upward movement of said punch so as to strip the can body from the punch; and eccentric screw means secured to said platform and disposed in openings formed in each of said segments for limiting the movement of said segments, thereby providing an adjustment of said apparatus.

4,327,572

WEAR TESTER FOR SHOES

F. Judson Pitman, Portsmouth, and Richard J. Chouinard, Barrington, both of N.H., assignors to BRS, Inc., Beaverton, Oreg.

Filed Jun. 13, 1980, Ser. No. 159,298
Int. Cl.³ G01N *3/56*
U.S. Cl. 73—7 **19 Claims**



1. An apparatus for testing the wear characteristics of the sole of a shoe, comprising:

an upstanding frame;

an abrasive wear surface supported by the frame;

first means for carrying a test shoe with the sole thereof in operative proximity to the wear surface; and

a plunger assembly supported by the frame and attached to the first means for repetitively driving the sole of the test shoe against the wear surface, the plunger assembly including a plurality of plunger mechanisms and means for reciprocating each plunger mechanism to cause the test shoe to move through a simulated leg cycle such that the sole of the test shoe repetitively strikes the wear surface.

4,327,573

METHOD AND APPARATUS FOR DETERMINING THE LOW TEMPERATURE CHARACTERISTICS OF MATERIALS

Thomas A. Jennings, Bala Cynwyd, Pa., assignor to T. A. Jennings Associates, Inc., Bala Cynwyd, Pa.

Filed Feb. 29, 1980, Ser. No. 125,790
Int. Cl.³ G01N *25/04, 27/14*
U.S. Cl. 374—10 **23 Claims**

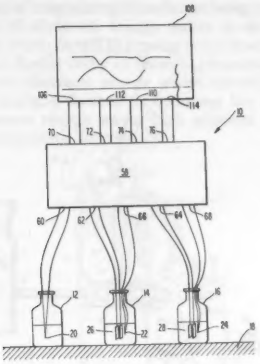
1. A method of determining low temperature characteristics of a sample material comprising the steps of:

(a) varying the temperature of said sample material and a comparison material;

(b) measuring electrical resistivity of said sample material;

(c) measuring electrical resistivity of said comparison material;

(d) measuring the temperature of said sample material as a reference temperature; and



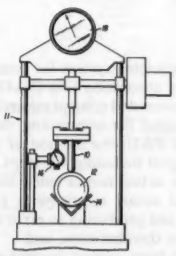
(e) plotting ratio D_2 of the resistivity of said comparison material to the resistivity of said sample material as a function of said reference temperature.

4,327,574

NON-DESTRUCTIVE DISSOLVED GAS VOLUME TESTING METHOD

Alfred C. Alberghini, Dunwoody, and Dennis C. Donalson, Marietta, both of Ga., assignors to Sewell Plastics, Inc., Atlanta, Ga.

Filed Jul. 22, 1980, Ser. No. 171,041
Int. Cl.³ G01N *7/00*
U.S. Cl. 73—19 **5 Claims**



1. A method for determining the amount of gas dissolved in a liquid contained in a sealed, thin-walled container including a head space containing a quantity of undissolved gas, the container and its contents being maintained at a constant temperature, the method comprising the steps of:

supplying a known force on a surface of the container for a period of time insufficient to cause any gas in the head space to dissolve into the liquid, the known force being sufficient to deform the container, and

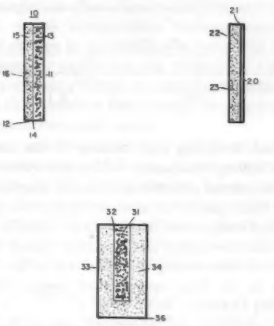
measuring the amount of deformation of the container.

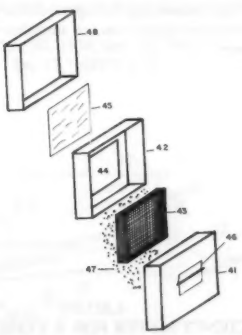
4,327,575

MONITORING APPARATUS AND METHOD FOR TOXIC VAPORS

Laurence D. Locker, 201 NE. 2nd St., Pompano Beach, Fla. 33060

Filed Mar. 24, 1980, Ser. No. 133,249
Int. Cl.³ G01N *31/06*
U.S. Cl. 73—23 **17 Claims**





1. A monitoring device, comprising:

a primary adsorbent for a predetermined substance;

a gas permeable basket for containing said primary adsorbent;

means to secure said basket in said container;

means for admitting ambient atmosphere into said container; and

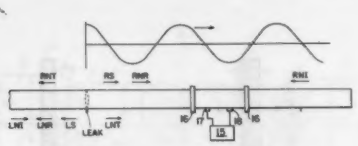
an isolating granular adsorbent for selectively removing material from the atmosphere by adsorption, said isolating adsorbent positioned in said container between said primary adsorbent and said means for admitting ambient atmosphere whereby ambient atmosphere can reach said primary adsorbent only after flowing through said isolating granular adsorbent arranged in a bed of loosely packed granules.

4,327,576

ACOUSTIC LEAK DETECTOR

Joseph W. Dickey, Annapolis; Paul M. Moore, Gaithersburg, and Lloyd E. Powell, Annapolis, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1980, Ser. No. 146,984
Int. Cl.³ G01M 3/08
U.S. Cl. 73—40.5 A 12 Claims



1. A leak detecting and locating device for a fluid system having a leaking component within the system comprising:

first and second processing channels adapted to be attached to a fluid system for converting acoustical signals from a leaking component into electrical signals;

means for combining the electrical signals from said channels for determining the direction of the leaking component in the fluid system with respect to said first and second channels; and

means receiving the combined signals for indicating the direction of the leaking component with respect to the detecting device, wherein each of said channels includes, a transducer mounted to receive, within a preselected frequency range, the characteristic dominant primary acoustical signals from the leaking component and to convert the acoustical signals to primary electrical signals;

an amplifier unit for increasing the strength of the signal from the transducer;

a variable delay unit for delaying the transmission of signals from said amplifier unit; and

a means for processing the signals from said variable delay unit with the signal from the amplifier unit of one of said channels.

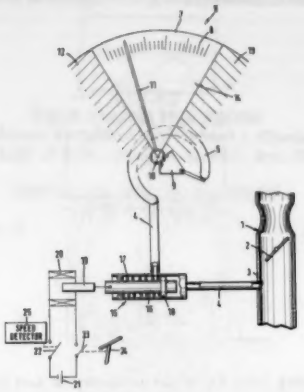
4,327,577

EFFICIENCY METER FOR A VEHICLE ENGINE

Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 161,026
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926023
Int. Cl.³ G01L 23/24
U.S. Cl. 73—115 3 Claims

1. An instrument of displaying an indication of the operating efficiency of a motor vehicle engine coupled to an automatic transmission, said transmission having a selector lever, comprising an indicator having an operating mechanism actuated by the engine intake vacuum pressure and a switch means positioned in a connecting line between said operating mechanism and the vehicle engine intake passage, wherein said switch means connects said operating mechanism to said intake passage only when said selector lever is in the drive position and the engine is operating at a speed above idling speed and



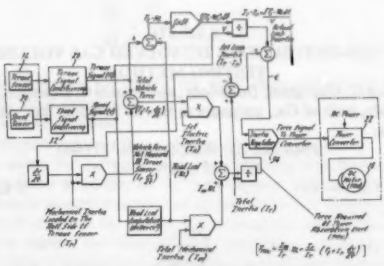
corresponding to engagement under normal operating conditions of the highest gear of said automatic transmission.

4,327,578

DYNAMOMETER

Severino D'Angelo, Laguna Beach, Calif., assignor to Horiba Instruments Incorporated, Irvine, Calif.

Filed Dec. 19, 1979, Ser. No. 105,404
Int. Cl.³ G01L 3/22
U.S. Cl. 73—117 14 Claims



12. In a dynamometer system for testing vehicles in place including a power absorption unit (PAU) for simulating road load and inertia forces and control means for producing a force output control signal for controlling the total force output simulated by said PAU; the method of regulating said force output control signal including the steps of:

determining the actual inertia being simulated;

comparing said actual inertia with a preselected desired inertia value and producing an error signal proportional to the difference therebetween, and

modifying said force output control signal in accordance with said error signal.

4,327,579

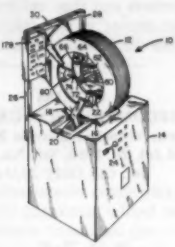
ULTRASONIC TIRE TESTING APPARATUS

Arnold A. Weiss, Minneapolis, Minn., assignor to AMF Incorporated, Santa Ana, Calif.

Division of Ser. No. 70,720, Aug. 29, 1979, Pat. No. 4,297,876.
This application Mar. 9, 1981, Ser. No. 241,497
Int. Cl.³ G01M 17/02
U.S. Cl. 73—146 3 Claims

1. In an ultrasonic vehicle testing device of the type in which

a tire casing to be tested is mounted for rotation about a central axis between an array of ultrasonic transmitting transducers and an array of ultrasonic receiving transducers, the transducers in said array of transmitting transducers being positioned to direct a beam of ultrasonic energy waves to discrete bands along the tread width of said tire casing and where said receiving transducers in said array of receiving transducers are located to receive ultrasonic energy waves traversing through said discrete bands, a method of reducing the interference between ultrasonic energy waves from adjacent transmitting transducers, comprising the steps of:



(a) pointing said ultrasonic transmitting transducers associated with adjacent bands across the tread width in different directions, displaced along the circumferential direction of said tire casing; and

(b) locating said ultrasonic receiving transducers associated with adjacent zones at spaced apart locations along the circumferential direction of said tire casing corresponding to the direction in which said ultrasonic transmitting transducers are pointed.

4,327,580

METHOD OF AND APPARATUS FOR INSPECTING PNEUMATIC TIRE

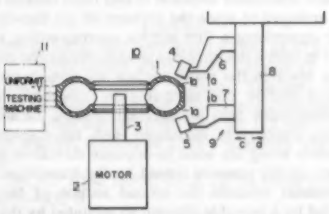
Kouji Suzuki, Musashino, and Takanori Takata, Higashimurayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jun. 6, 1980, Ser. No. 157,243

Claims priority, application Japan, Mar. 3, 1980, 55-026310

Int. Cl.³ G01M *17/02*

U.S. Cl. 73—146 **10 Claims**



1. A method for inspecting an inflated pneumatic tire for an irregularity in the arrangement of the tire cords forming part of a side wall portion of the tire, comprising the steps of:

driving one of the tires and capacitance-type distance detector unit positioned in the vicinity of the side wall portion of the tire so that the detector unit and the tire are continuously rotated with respect to each other about the center axis of the tire, the distance detector unit providing an analog signal indicative of the continuously measured distance between the detector unit and the side wall portion of the tire in a circumferential direction of the side wall;

determining from said signal a distance change representative of a surface irregularity resulting from the irregularity in the arrangement of the tire cords, the distance charge being detected by:

(1) differentiating said signal with respect to time to produce a signal representative of the differential coefficient of the distance between the side wall and the detector unit,

(2) producing a first signal substantially representative of an amount of change in the distance between the side wall and the detector unit when the differential coefficient indicates a distance change in a first direction that is larger in magnitude than a first predetermined value and a second signal substantially representative of an amount of change in the distance between the side wall and the detector unit when the differential coefficient indicates a distance change in a second direction opposite to the first direction that is larger in magnitude than a second predetermined value,

(3) comparing said first and second signals with reference signals representing third and fourth predetermined values, respectively, for producing (a) a third signal when said first signal is larger in magnitude than the third predetermined value reference signal and (b) a fourth signal when said second signal is larger in magnitude than the fourth predetermined value reference signal, and

(4) producing a fifth signal in the presence of said fourth signal during a first predetermined period of time after said third signal is produced and a sixth signal in the presence of said third signal during a second predetermined period of time after said fourth signal is produced.

4,327,581

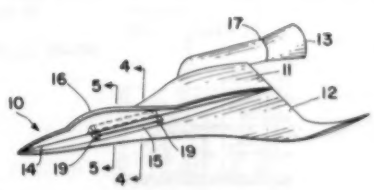
METRIC HALF-SPAN MODEL SUPPORT SYSTEM

Charlie M. Jackson, Jr., Yorktown; Samuel M. Dollyhigh, and David S. Shaw, both of Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 30, 1980, Ser. No. 145,210

Int. Cl.³ G01M *9/00*

U.S. Cl. 73—147 **3 Claims**



1. A wind tunnel model and support system for use in a wind tunnel test section comprising in combination:

a symmetrical model of an aircraft having wings;

said symmetrical model comprising a metric half-span and a nonmetric half-span;

said metric half-span being adjacent to said nonmetric half-span at the plane of symmetry of said model;

sting support means attached to the wing tip of said nonmetric half-span and adapted for attachment to a wind tunnel test section;

a strain gauge balance positioned within the fuselage of said symmetrical model and connected to said metric half-span and to said nonmetric half-span;

said sting support means being disposed parallel to the model plane of symmetry and aft of the strain gauge balance position to thereby minimize airflow interference around

the model and avoid affecting said strain gauge balance measurements;

a sealing gasket positioned between said metric half-span and said nonmetric half-span; and

said gasket creating an airtight interface between said metric half-span and said nonmetric half-span.

4,327,582

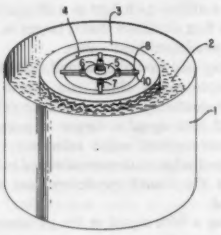
LIQUID WHEEL BALANCER

Arnold M. Eich, R.R. 2, Flandreau, S. Dak. 57028

Filed Jul. 23, 1980, Ser. No. 171,444

Int. Cl.³ G01M *1/12*

U.S. Cl. 73—483 **5 Claims**



1. A wheel balancing device comprising a tub of liquid of sufficient size to immerse vertically a tire and wheel and to rotate the same so that it floats horizontally, a tire and wheel assembly in said tub and level determining means including a spherical bubble level removably mounted on said tire and wheel assembly.

4,327,583

WEATHER FORECASTING DEVICE

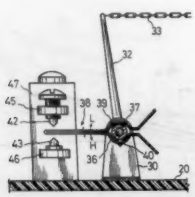
Toshio Fujimoto, Nishinomiya, Japan, assignor to Fujiya Kabushiki Kaisha, Osaka, Japan

Filed Sep. 26, 1980, Ser. No. 191,311

Claims priority, application Japan, May 7, 1980, 55-62922[U]

Int. Cl.³ G01L *7/12*

U.S. Cl. 73—386 **6 Claims**



1. A weather forecasting device comprising:

(a) a device which deforms according to the magnitude of atmospheric pressure,

(b) a member which transmits the amount of said deformation,

(c) a bell crank adapted to be rotated by said transmission member,

(d) a device connected to said bell crank and adapted to indicate values of atmospheric pressure,

(e) a grooved pulley fixed to the shaft of said bell crank to rotate with rotation of the bell crank,

(f) a switch plate having both resilience and electric conductivity and attached to the grooved pulley such that normally it is rotated together with the grooved pulley but when it is subjected to a rotation-preventive force exceeding a predetermined limit, slippage takes place between said switch plate and said grooved pulley so that it is no longer rotated with the latter,

(g) a pair of contacts spaced apart from each other with the front end of the switch plate disposed therebetween,

(h) a device for representing weather forecasts, and

(i) electric circuitry designed to set said weather forecast representing device to a predetermined representing mode according to a situation of contact between the switch plate and the two contacts,

the arrangement being such that if there is a change in atmospheric pressure, the switch plate first comes in contact with either of said contacts and then deforms by bending and if there is a greater change in atmospheric pressure, slippage takes place between the switch plate and the grooved pulley.

4,327,584

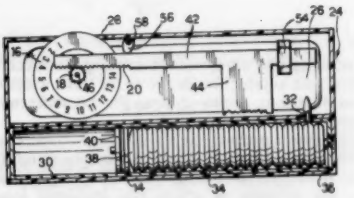
DECOMPRESSION GAUGE

Carlo Alinari, Corso Vittorio Emanuele 200, Turin, Italy

Filed Jul. 29, 1980, Ser. No. 173,245

Int. Cl.³ G01F *23/14*

U.S. Cl. 73—300 **14 Claims**



1. In a decompression meter adapted to be carried by a diver during an underwater dive comprising:

a housing formed with at least one aperture communicating the interior of the housing with the external water environment;

a deformable envelope defining a variable volume chamber, a rigid envelope defining a fixed volume chamber, and means defining a restricted passage intercommunicating said chambers, both said chambers being disposed within the housing and containing gas, and the deformable envelope being subjected to the pressure of the external environment;

a pressure transducer disposed in said fixed volume chamber and arranged to sense the pressure of gas therein;

a scale comprising a first section corresponding to conditions in which decompression halts during the ascent of a diver towards the water surface are unnecessary, and a second section corresponding to conditions in which decompression halts are necessary during the ascent; and

an index operatively associated with the transducer and movable along the scale in opposite directions in dependence on the pressure sensed by the transducer, the improvement wherein the second section of the scale is carried by a movable element so mounted by the housing as to be displaceable relative to the first scale section, said meter further comprising indicator means for indicating the position of the movable element relative to said first scale section, and a manual operating member associated with said movable element and operable by the diver to cause displacement of said element along said first scale section to a position selected at least on the basis of the maximum depth reached and, optionally, on the basis of the dwell time at at this maximum depth and on the basis of the elapsed time between the previous dive and the current dive whereby the necessity and number of decompression halts during ascent from a dive can be determined by the position of said index relative to said second section of the scale.

4,327,585
REFRACTOMETER

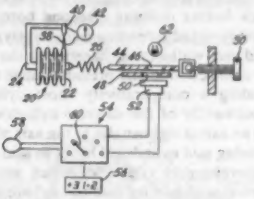
Keith D. Froome, Hampton, England, assignor to National Research Development Corporation, London, England

Filed May 13, 1980, Ser. No. 149,559

Claims priority, application United Kingdom, May 31, 1979, 7918960

Int. Cl.³ G01D *21/02*; G01N *21/41*

U.S. Cl. 374—45 **6 Claims**



1. A terrestrial refractometer comprising:

a gastight enclosure containing a fixed mass of a gas which at least approximates to an ideal gas, at least a part of the enclosure being movable in response to changes in the volume of the gas in accordance with changes in ambient temperature T and pressure P;

constraining means for constraining said movable part so as to maintain the gas at a constant volume;

force sensing means for providing a signal related to the force dP applied to the movable part by the constraining means;

temperature sensing means for sensing the ambient temperature T; and

calculating means for calculating the difference dn from refractive index n_o at standard temperature T_o and pressure P_o in accordance with the equation:

$$dn = (n_o - 1)\frac{dP}{P_o} \times \frac{T_o}{T}$$

4,327,586
STUFFING BOX FOR INTRODUCING INSTRUMENT INTO HIGH PRESSURE CONDUIT

Christopher D. J. Goddard, Farnham, England, assignor to Redland Automation Limited, Winchester, England

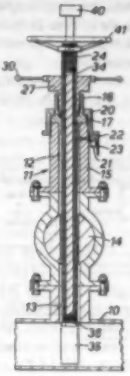
Filed Jul. 28, 1980, Ser. No. 172,740

Claims priority, application United Kingdom, Sep. 10, 1979, 7931305

Int. Cl.³ F16J *15/06*; G01F *15/18*; G01K *1/14*

U.S. Cl. 73—432 R **8 Claims**

1. A stuffing box for introducing a member into a high pressure conduit and removing it therefrom, said stuffing box comprising a housing member having a threaded passage therethrough and having an internally threaded recess which communicates with one end of the threaded passage and is of greater diameter than the latter, an externally threaded stem which is threaded into and passes through the threaded passage, a gland nut which is disposed in said recess and which annularly surrounds the threaded stem, the gland nut having corresponding internal and external threads which are respectively threaded onto the threaded stem and into the internally threaded recess to form threaded joints therewith, and extrudable sealing material disposed in said recess inwardly of the gland nut and externally of the stem, said sealing material being in engagement with the housing member, the threaded stem and the gland nut, rotation of the gland nut causing said sealing



material to be extruded into said threaded joints to seal the latter.

4,327,587
METHOD OF AND APPARATUS FOR THE CONTINUOUS MEASUREMENT OF CHANGES IN RHEOLOGICAL PROPERTIES OF MONOMERS DURING POLYMERIZATION

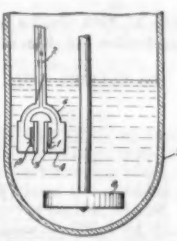
Jiri Docekal, Brno; Ludvik Parma, Prague; Ivan Pelant, Prague; Petr Sladky, Prague, and Josef Zdravil, Brno, all of Czechoslovakia, assignors to Vyzkumny ustav chemickych zrizeni, Brno, Czechoslovakia

Filed Jul. 30, 1979, Ser. No. 61,621

Claims priority, application Czechoslovakia, Aug. 1, 1978, 5055-78

Int. Cl.³ G01N *29/02*

U.S. Cl. 73—590 **8 Claims**

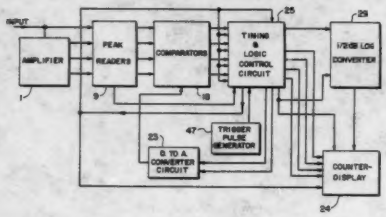


1. The method of continuous measurement of changes in the rheological properties of monomers during a polymerization process, comprising stirring the polymerizing system, and introducing into the stirred polymerizing system longitudinal ultrasonic oscillations of a frequency of from 0.02 to 100 MHz, monitoring the rate of propagation of oscillations received after passage through a part of the polymerization system as the polymerization process proceeds.

4,327,588
AUTO-RANGING ULTRASONIC ATTENUATION METERS

Desmond J. North, Brackley, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 28, 1980, Ser. No. 182,247
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—599 **6 Claims**

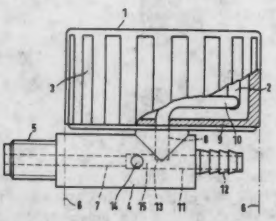


1. An autoranging ultrasonic attenuation meter comprising:
receiver transducer means supplying an ultrasonic input signal,
amplifier means for supplying a plurality of amplified input signals having different amplitude ranges,
amplitude reader means for detecting and storing the peak voltage amplitudes of said input signal and amplified signals,
comparator means for comparing the peak voltage of the signals with a constant reference voltage and to produce a binary output corresponding to each of said signals as a first quantisation of attenuation level,
means supplying a reference voltage having constant and variable portions to said comparator means,
means for selecting an output corresponding to one of said signals having a peak voltage in a predetermined range, and
means for comparing the voltage of the selected output with said variable reference voltage to produce a second quantisation of attenuation level.

4,327,589
FOOT PUMP PRESSURE GAUGE HAVING AN INTEGRATED HOUSING AND CONNECTOR

Steffen Förster, Neuenburg, Fed. Rep. of Germany, assignor to F + R Forster & Rothmann GmbH, Neuenburg, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,017
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 8002155[U]
Int. Cl.³ G01L *7/04*
U.S. Cl. 73—741 **8 Claims**

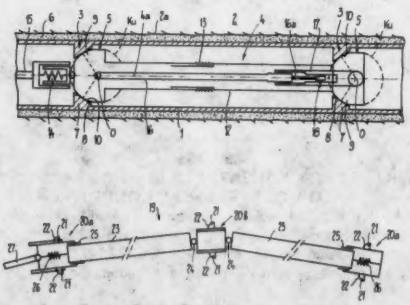


1. A pressure gauge for a foot pump comprising a hollow cylindrical housing having an end wall, a pressure gauge mechanism disposed within said housing, and a connector located on the exterior side of said end wall of said housing, said connector comprising an elongated cylindrical block whose central axis is oriented substantially at right angles to the central axis of said cylindrical housing, said block having a first coupling member at one end thereof for coupling said housing and gauge mechanism to a foot pump, and having a second coupling member at the other end thereof for coupling said housing and gauge mechanism to a hose, the interior of said block defining a first bore communicating with and extending between said first and second coupling members, and the interior of said block further defining a second bore communicating with said first bore and extending transversely to said first bore through said end wall of said housing to the interior of said housing for connection to said pressure gauge mechanism, said block including a comparatively short cylindrical portion extending outwardly of the exterior cylindrical wall of said block along an axis at right angles to the axis of said cylindrical block for joining said cylindrical block to said end wall of said housing, whereby said connector block is of substantially T-configuration and has its exterior cylindrical wall spaced from the said end wall of said housing by said comparatively short cylindrical portion therebetween, said second bore extending through said comparatively short cylindrical portion in coaxial relation therewith, said housing, connector block and first and second coupling members all being formed integrally with one another in a one-piece construction.

4,327,590
METHOD AND APPARATUS FOR DETERMINING SHIFTS AT TERRAIN AND IN STRUCTURES

Kalman Kovari, Zürich; Jakob Köppel, Würenlos, and Christian Amstad, Oberhasli, all of Switzerland, assignors to Gesellschaft zur Forderung der Forschung an der Eidgenössischen Technischen Hochschule, Zürich, Switzerland

Filed Dec. 10, 1979, Ser. No. 101,761
Claims priority, application Switzerland, Dec. 21, 1978, 12988/78
Int. Cl.³ G01B *5/00*
U.S. Cl. 73—784 **46 Claims**



1. A method of determining displacements in terrain, rock formations, structures and buildings and the like, comprising the steps of:
defining by means of mechanical stops arranged by a uniform spacing from one another and extending through a hollow space of the medium which is to be examined at least two neighboring measuring locations;
determining in succession by a measuring probe having at least two mechanical counter stops the mutual position of said at least two neighboring measuring locations;
said counter stops having measuring heads which can be varied at least with respect to their mutual spacing;
said step of determining said mutual position of the neighboring measuring locations comprising:

bringing each counter stop into contact with a related stop; and

detecting the relative position of the measuring heads.

4,327,591

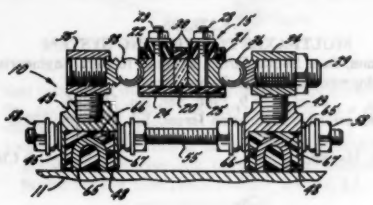
STRAIN SENSING DEVICE WITH MAGNETIC MOUNTING

Frank R. Dybel, Olympia Fields, and Kenneth MacDonald, Deerfield, both of Ill., assignors to International Measurement & Control Co., Frankfort, Ill.

Filed Apr. 30, 1980, Ser. No. 145,223

Int. Cl.³ G01L *1/16*

U.S. Cl. 73—855 **13 Claims**



5. A device for sensing deformation on a force carrying member comprising a transducer for generating an electrical output signal proportional to the applied loading, a pair of brackets supporting said transducer in a line parallel with the strain to be detected, means for removably mounting said brackets on said force carrying member, said mounting means for each bracket including a magnetic element for securing said bracket in place on said member by magnetic attraction between said magnetic element and said force carrying member, and said magnetic element having sufficient magnetic strength for enabling strain in said force carrying member to be transmitted through said brackets to said transducer while permitting selected manual removal and repositioning of said device on said force carrying member.

4,327,592

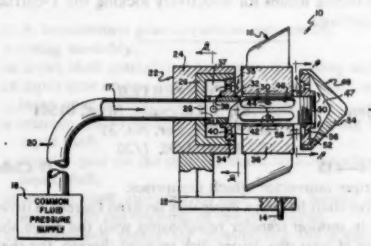
HYDROSTATIC BEARINGS FOR A TURBINE FLUID FLOW METERING DEVICE

James R. Fincke, Rigby, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 2, 1980, Ser. No. 145,940

Int. Cl.³ G01F *1/10*

U.S. Cl. 73—861.91 **4 Claims**



1. In a fluid metering device, which includes a rotor hub encircling a stationary rotor shaft having orifices therein about which said rotor hub is capable of rotating, an upstream and a downstream bearing assembly and affixed to an upstream and downstream end, respectively, of the rotor shaft, an upstream and a downstream thrust bearing section, a common pressure supply of bearing fluid, a means coupled to said supply for distributing bearing fluid to bearing surfaces between the rotor hub and the rotor shaft and between the rotor hub and the upstream and downstream bearing assemblies, said means for distributing fluid including orifices in said rotor shaft and said upstream and downstream bearing assemblies for tranporting bearing fluid to the bearing surfaces, said means for distributing bearing fluid equilibrating the bearing fluid pressure throughout the bearing volume, thereby permitting continuous supply of bearing fluid to said bearing surfaces, the improvement comprising a separate shallow pocket positioned at the center termination of each orifice in said rotor shaft, said upstream thrust bearing section, and said downstream thrust bearing section.

4,327,593

FORCE TRANSDUCER

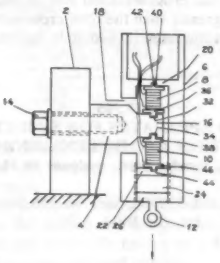
Chaim Porat, Beer-Sheva, Israel, assignor to Beta Engineering & Development Ltd., Beer-Sheva, Israel

Filed May 9, 1980, Ser. No. 148,485

Claims priority, application Israel, Jul. 19, 1979, 57841

Int. Cl.³ G01L *1/16*

U.S. Cl. 73—862.68 **12 Claims**



1. A force transducing device mountable to a fixed support and adapted to produce an electrical signal in response to the application of an external force to the device, characterized in that the device includes two force transducer units mounted to the fixed support along a common axis by first and second mounting members, said first mounting member comprising an arm interposed between and engaging the inner confronting ends of the two force transducer units, said second mounting member comprising an outer frame member enclosing the two force transducer units and engaging their outer ends; one of said mounting members being attachable to the fixed support, and the other of said mounting members including force applying means in alignment with said common axis for applying the external force in a linear direction along said common axis.

4,327,594

BOUNCELESS HIGH PRESSURE DROP CASCADE IMPACTOR AND A METHOD FOR DETERMINING PARTICLE SIZE DISTRIBUTION OF AN AEROSOL

Philip A. Nelson, 326 Ranger Dr., Olympia, Wash. 98503

Continuation-in-part of Ser. No. 464,158, Apr. 25, 1974, abandoned, and a continuation of Ser. No. 821,608, Aug. 3, 1977, Pat. No. 4,189,937. This application Jun. 25, 1979, Ser. No. 51,687

Int. Cl.³ G01N *15/02*

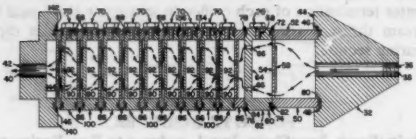
U.S. Cl. 73—863.22 **72 Claims**

1. A cascade impactor for sampling a particle laden gas for particle size distribution, said impactor comprising:

a. a gas inlet and a gas exit;

b. a plurality of stages between said gas inlet and said gas exit wherein each stage comprises a jet plate and a collector plate except that the first jet plate may be a part of or may be replaced by the inlet nozzle;

c. a collector plate downstream from each jet plate, and a jet plate upstream from each collector plate;
d. each jet plate having one or more hole(s) through which the particle laden gas passes wherein said hole(s) are positioned so that the gas from the jet plate is directed to the collector surface on the respective collector plate downstream from said jet plate;
e. a fluid flow path between each collector plate and the jet plate immediately downstream and which path allows



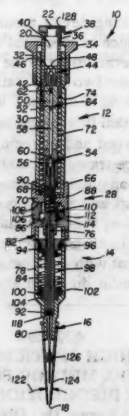
relatively unrestrained flow of the particle laden gas from each collector plate to the next succeeding jet plate;
f. appropriate sealing means between a jet plate and a collector plate to cause the gas to flow entirely through the jet plate holes and through the designated passageways between collector plate and succeeding jet plate; and,
g. in which the total cross-sectional area of the jet holes in a given stage is greater than the total cross-sectional area of the jet holes in the stage immediately upstream from said given stage.

4,327,595

METHOD AND APPARATUS FOR SIMULTANEOUS DILUTION AND DISPENSATION

Harold R. Schultz, Sparks, Nev., assignor to Hamilton Company, Reno, Nev.

Filed Jul. 7, 1980, Ser. No. 166,141
Int. Cl.³ B01L *3/02*
U.S. Cl. 73—864.12 **30 Claims**



1. A diluting dispenser for mixing a specimen with a diluent and substantially simultaneously dispensing the mixture, comprising

syringe means including a diluent chamber, and means for drawing a predetermined volume of the diluent into said diluent chamber and for expelling the diluent from said diluent chamber, and

pipette means including a dispensing tip, a specimen chamber and means for drawing a predetermined volume of the specimen into said specimen chamber,

said diluent expelling means including nozzle means directed toward said dispensing tip and arranged for interaction with said specimen chamber in order to draw said specimen into intimately mixed relation with a jet of diluent as it passes toward said dispensing tip so that the mixture of diluent and specimen is dispensed substantially simultaneously as it is mixed,

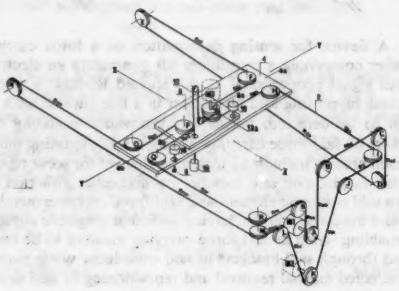
said syringe means further comprising a reservoir from which diluent is drawn into said diluent chamber, the means for drawing a predetermined volume of diluent into said diluent chamber comprising a first check valve communicating said diluent reservoir with said diluent chamber and a second check valve communicating said diluent chamber with said nozzle means, said means for drawing diluent into said diluent chamber and for expelling diluent from said diluent chamber comprising means for effectively expanding and contracting said diluent chamber.

4,327,596

MULTI-AXES POSITIONING SYSTEM

Avi Simon, Beer Sheva, Israel, assignor to Beta Engineering & Development Ltd., Beer Sheva, Israel

Filed May 9, 1980, Ser. No. 148,486
Claims priority, application Israel, Jul. 27, 1979, 57913
Int. Cl.³ F16H *27/02, 29/20*
U.S. Cl. 74—89.2 **9 Claims**



5. A positioning system including an X-carriage movable on a frame along the X-axis, a Y-carriage movable on a frame along the Y-axis, at least one bi-directional drive, and flexible coupling means trained over a plurality of guide wheels and driven by said drive for moving said carriages, characterized in that said flexible coupling means is in the form of a single closed loop trained over a plurality of guide wheels some located on the frame on opposite sides of both said X-carriage and Y-carriage, and others located on opposite sides of said carriages, and arranged so as to selectively move either or both the X-carriage and the Y-carriage by the drive; said system further including means for selectively locking the Y-carriage to the X-carriage.

4,327,597

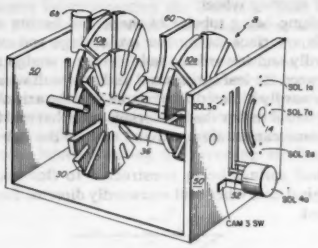
TORQUE CONVERTER

Jose M. Soto, P.O. Box 783, S. Lancaster, Mass. 01561

Filed Jan. 2, 1979, Ser. No. 31
Int. Cl.³ F16H *1/06, 1/20*
U.S. Cl. 74—415 **19 Claims**

1. A torque converter which comprises:
(a) a drive shaft having a drive disk secured thereto, a driven shaft in motion transfer relationship with the drive shaft having at least one driven disk secured thereto, the shafts arranged in parallel relationship, the drive disk and driven disk each comprising a plurality of slots, the driven disk comprising twice as many slots as the drive disk;
(b) a plurality of rods received in a movable manner in at least two of the slots of one of said disks, the rods to effect transfer of motion between the shafts;
(c) means to control the conversion ratio (Y/X) between the shafts which means includes a plurality of guide sets re-

ceived in walls in a reciprocating manner, the guide sets when actuated adapted to control the path of the rods when the rods received in the slots of one disk are engaged in the slots of another disk, the guide sets defining channels and positioned to intercept the path of the rods such



that they travel through the channels during motion transfer, each of the guide sets corresponding to a different conversion ratio; and,

means to hold the rods in non-engagable releasable relationship in the drive disk, the guide sets dimensioned to provide conversion ratios of 0.5:1, 1:1 and 2:1.

4,327,598

GEAR TRANSMISSION APPARATUS FOR AN AUTOMOBILE

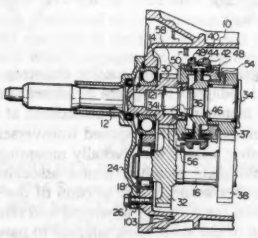
Tetsuzo Yoneda; Yoshitaka Sogo; Masami Fukushima, all of Toyota, and Shinichi Miyagawa, Anjo, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 8, 1980, Ser. No. 138,648

Claims priority, application Japan, Jan. 21, 1980, 55/004484[U]

Int. Cl.³ F16H *57/04*

U.S. Cl. 74—467 **5 Claims**



1. A transmission gear apparatus comprising:

a casing assembly;

an input shaft rotatably mounted to the casing assembly;

an input gear on one end of the input shaft in the casing, said input gear having an axial opening;

a counter shaft rotatably mounted on the casing below the input shaft;

a counter gear on the counter shaft, which meshes with the input shaft;

an output shaft mounted on said casing having an end inserted into the opening of the input gear;

a transmission means for transmitting the rotation of the input shaft to the output shaft under predetermined gear ratios;

a bearing unit arranged in the opening for supporting said end of the output shaft in the input shaft;

at least one substantially radially extending rotatable passageway adjacent to said input gear, the inner radial end of said passageway being open to said bearing unit and the outer radial portion of said passageway being open to said input gear, said passageway being forwardly inclined in the direction of the rotation of the shaft, and;

guide plate means located on one side of the counter shaft wherein the lubricant oil is urged to move upwardly due to the rotation of the counter gear, said plate extending to a position near a point where the input gear and the counter gear mesh with each other, so that the lubricant oil is effectively received in the passageway in order to direct the lubricant oil to the bearing unit.

4,327,599

BLOCKING MECHANISM

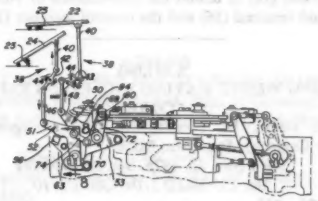
Patrick W. Friede, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00264, § 371 Date Feb. 28, 1980, § 102(e) Date Feb. 28, 1980, PCT Pub. No. WO81/02476, PCT Pub. Date Sep. 3, 1981

PCT Filed Feb. 28, 1980, Ser. No. 173,928

Int. Cl.³ G05G *5/08*

U.S. Cl. 74—483 R **10 Claims**



1. A control linkage comprising:

the bracket (53) having an apertured hub (54) extending therethrough;

a sleeve (58) pivotally mounted in said hub (54);

a first lever (50) having one end portion fixed on said sleeve (58), said first lever (50) having an attaching portion (48) spaced from said one end portion;

a pivot shaft (63) pivotally disposed ... said sleeve (58);

a second lever (52) having one end portion fixed on said pivot shaft (63), said second lever (52) having an attaching portion (51) spaced from said one end portion;

means (38) for connecting a pair of input functions to said attaching portions (48,51);

means (61,67) for connecting a pair of output functions to said sleeve (58) and to said pivot shaft (63);

a toggle linkage assembly (70) including,

lever means (72) having an intermediate portion (82) pivotally mounted to said bracket (53), a first leg (76), and a second leg (78), the first leg (76) being longer than the second leg (78) and having first stop means (80) secured thereto in alignment with the path of movement of the first lever (50), second stop means (84) on said lever means (72) in alignment with the path of movement of said second lever (52), and

link means (74) extending between a mid-portion (86) of the second lever (52) and a shorter leg (78) of said lever means (72) limiting the extent of movement of said one of said levers (50,52) in response to movement of said other of said levers (50,52).

4,327,600

REMOTE CONTROL (CONNECTOR O-RING)

William G. Bennett, Troy, Mich., assignor to Teleflex Incorporated, Limerick, Pa.

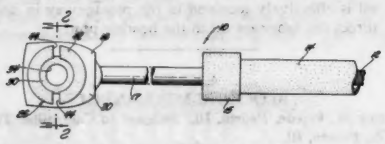
Filed Jun. 2, 1980, Ser. No. 155,457

Int. Cl.³ F16C *1/14*

U.S. Cl. 74—501 R **8 Claims**

1. A motion transmitting remote control assembly (10) of the type for transmitting motion in a curved path by a flexible motion transmitting core element, said assembly (10) compris-

ing; a flexible motion transmitting core element (12), guide means (14) for movably supporting said core element (12) with the ends of said core element (12) extending from said guide means (14), a terminal (16) disposed on one end of said core element (12) and having first (18) and second (20) faces with an aperture (22) extending between said faces (18, 20) for receiving a control member (24), an incompressible fitting (26) retained in said aperture (22) and having a passageway (28) extending therethrough for surrounding the control member (24), characterized by resilient means (30) disposed in said passageway (28) for cushioning the control member (24) from said terminal (16) to inhibit the transmission of vibrations between said terminal (16) and the control member (24).

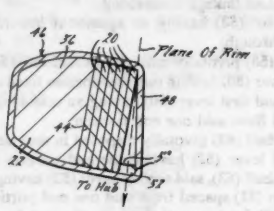


4,327,601

STEERING WHEEL HAVING INCLINED LEAF SPRING CORE

Lloyd R. Vivian, Jr., Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 13, 1978, Ser. No. 960,151
Int. Cl.³ B62D 1/04; G05G 1/10
U.S. Cl. 74—552 3 Claims



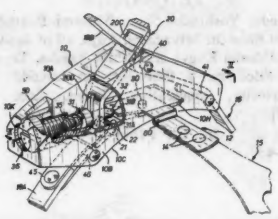
1. A steering wheel for motor vehicle comprising:
a hub;
rim having a lower portion, upper portion, and spoke assembly interconnecting the hub with the lower portion of the rim;
said lower and upper portions having a flexible outer covering;
said upper portion of said rim including a core of a plurality of stacked arcuate leaf springs;
each leaf spring being canted forwardly and toward the hub;
seat means mounting said leaf springs onto said lower portion of the rim;
said seat means comprising said lower portion of the rim having a seat portion in each upper end thereof with a smooth surface abutting one surface of one of the leaf springs;
said smooth surface being canted forwardly toward the hub;
said seat portions of said lower portion having apertures therethrough;
said stack of leaf springs having apertures therethrough aligned with aperture of said lower portions;
fasteners extending through the aligned apertures and fastening the leaf springs to the seat portions of the lower portions;
a clamp tightly surrounding each seat portion and stacked leaf springs above the fasteners;
said upper portion being deformable in response to an impact imposed thereon in a direction parallel to the axis of said steering wheel;
said upper portion being constructed to be substantially rigid with respect to a tangential force applied by a vehicle operator to said upper portion for the purpose of turning said steering wheel;
said clamp being tubular in shape and having a rear wall with a surface facing the leaf springs and canted rearwardly and toward the hub leaving a wedge shaped gap between the leaf springs and said rear wall which allows a rearwardly directed force parallel to the axis of said steering wheel to flex the leaf springs such that said leaf springs become canted rearward and toward the hub filling said gaps;
said leaf springs being constructed to flex back to their original cant when said rearwardly directed force is terminated.

4,327,602

EMERGENCY RELEASE DEVICE FOR A TOE CLIP STRAP

Dominique Le Bec, Neuilly-sur-Seine, France, assignor to Poutrait-Morin, Aubervilliers, France

Filed Jul. 14, 1979, Ser. No. 60,199
Claims priority, application France, Jul. 28, 1978, 78 22440; Jun. 29, 1979, 79 17000
Int. Cl.³ G05G 1/14; A44B 21/00
U.S. Cl. 74—594.6 20 Claims



1. An emergency release device for the strap of a toe clip having a buckle adapted to tighten or loosen the strap, comprising a plate member adapted to be secured at a free end of a toe clip, a release member disposed transversely relative to said plate member, means for pivotally mounting said release member on said plate member, means associated with said release member for securing one portion of the strap on one side of said means for pivotally mounting said release member, another portion of the strap being adapted to pass through the buckle on the other side of the means for pivotally mounting said release member, said release member including a retractable latching member having cam means coacting with camming surfaces for normally maintaining said release member in an operative position in which the strap may be tightened by the buckle, said release member having an inoperative position in which the buckle is released to free the strap in response to a force exerted against the strap of the toe clip and the pivoting of said release member which ensues.

4,327,603

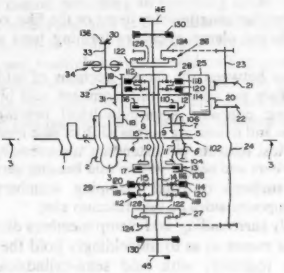
COMPACT TRANSMISSION FOR TRACKED VEHICLES

Franz X. Zaunberger, Augsburg, and Artur Kugler, Neusass, both of Fed. Rep. of Germany, assignors to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,971
Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920820
Int. Cl.³ F16H 47/08; B62D 11/00; F16H 37/06
U.S. Cl. 74—688 16 Claims

1. A transmission system for a tracked vehicle, the transmis-

sion system comprising a hydrodynamic torque converter having an output shaft, a transmission main shaft journalled for rotation along an axis transverse to the converter shaft axis, differential gear sets for engagement with the vehicle tracks, the differential gear sets being driven by the main shaft and gearing means interconnecting the converter shaft with the main shaft, the converter shaft extending across and beyond the main shaft at an elevation below the main shaft, the gearing means engaging a zone of the converter shaft, the zone being spaced from the converter a distance greater than the distance between the converter and the main shaft, the gearing means including a reversing mechanism driven by the converter shaft, the reversing mechanism comprising clutch means, and speed change means interconnecting the reversing mechanism and



the main shaft, the speed change means including a hollow shaft coaxial with the main shaft and planetary gear means interconnecting the main shaft with the hollow shaft, the transmission system further including a steering mechanism, the steering mechanism comprising a drive unit and a neutral shaft, the neutral shaft being in engagement with the differential gear sets, the neutral shaft having an axis parallel to t is of the main shaft and spaced from the converter a distance greater than the distance between the main shaft and the converter, the drive unit being positioned above the main shaft, the converter being adjacent one side of the main shaft and the zone of the converter shaft which engages the gearing means being adjacent the opposite side of the main shaft, whereby the transmission system is of reduced length.

4,327,604

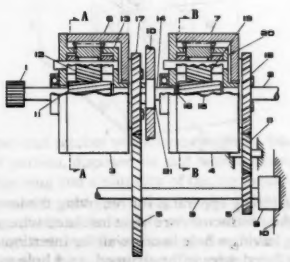
CONTINUOUSLY VARIABLE TRANSMISSION

Rix E. Evans, 3716 Sunset Ave., Rocky Mount, N.C. 27801

Filed Sep. 27, 1979, Ser. No. 79,547

Int. Cl.³ F16H *3/44, 3/74*

U.S. Cl. 74—751 **1 Claim**



1. A continuously variable ratio power transmission device having a source of rotated motion operatively connected to an input shaft, the improvement comprising: a primary drive unit in the form of a planetary gear set operatively driven by said input shaft and having a primary drive unit carrier and a primary drive unit annulus; a secondary drive unit in the form of a planetary gear set identical to said primary drive unit, said secondary drive unit having an input shaft operatively connected to the carrier of said primary drive unit and including a secondary drive unit carrier and a secondary drive unit annulus, said secondary carrier being operatively connected to a transmission output shaft; and an anti-reverse mechanism in the form of a pair of parallel shaft gears, one rigidly connected to said annulus of said primary drive unit and the other rigidly connected to said annulus of said secondary drive unit, said shaft gears being operatively interconnected through a pair of parallel shaft gears fixedly mounted on a countershaft whereby speed reduction ratio is determined by the torque delivery to the input shaft versus the load torque inserted on the output shaft with the anti-reverse mechanism limiting the maximum speed reduction ratio range of said transmission.

4,327,605

MANUAL SHARPENER FOR TEETH OF CHAIN SAWS

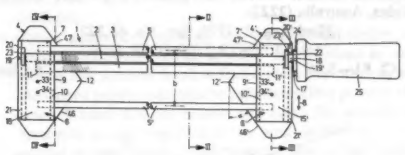
Werner Strojny, Marienheide, Fed. Rep. of Germany, assignor to Firma August Ruggeberg, Marienheide, Fed. Rep. of Germany

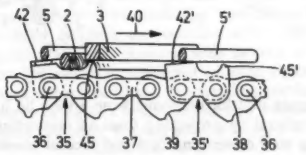
Filed Aug. 14, 1980, Ser. No. 178,162

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933293

Int. Cl.³ B23D *63/16*

U.S. Cl. 76—25 A **13 Claims**





1. In a sharpener for manual sharpening of cutting teeth of saw chains for chain saws, having a depth limiter disposed in front of a cutter in the cutting direction for controlling depth of cut, the cutter being defined by a line passing through a free surface forming the back of teeth to be sharpened and a cutting face situated on the front of the teeth; and a round file provided for sharpening the cutter by a cutting processing of the cutting face adapted to the tooth front with the cutting face in cross-section, an improvement comprising a guiding rod (5), which can be placed on a free surface (42) of a cutting tooth to be sharpened, a second guiding rod (5'), which can be placed on a free surface (42') of an adjacent cutting tooth (35') and a second file (3) which can be placed on said depth limiter (45) of said cutting tooth (35) to be sharpened disposed substantially in parallel to said round file (2), said two guiding rods (5,5'), said round file (2) and said second file (3) with respect to each other corresponding to the geometry of the cutting teeth.

4,327,606

METHOD OF MAKING A MASTER REPLICATING TOOL

Harry Howden, Smallfield, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,306

Claims priority, application United Kingdom, Nov. 6, 1978, 43277/78

Int. Cl.³ B23P *15/24*; C25D *5/54*

U.S. Cl. 76—107 R 6 Claims

1. A method of making a master replicating tool having a predetermined aspherical negative profile, which comprises initially machining the surface of a blank of a hard, non-deformable siliceous material with a cutting tool in a one-stage operation to produce approximately the predetermined profile with any fracture planes having a maximum depth of 20 μm; coating the resulting machined surface with a nickel or a nickel-based alloy layer having a thickness of 30 to 100 μm; thereafter machining the nickel-coated surface with the cutting tool and polishing said surface to an optical finish to produce essentially the predetermined profile; and applying a layer of an inert, scratch-resistant material to said profiled surface to protect the same.

4,327,607

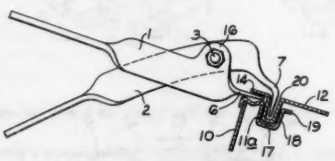
TOOL FOR REMOVING LIDS FROM TINS

Albert E. Morris, 64 Kuroki St., Penshurst, Sydney, New South Wales, Australia (2222)

Filed Aug. 2, 1979, Ser. No. 63,322

Int. Cl.³ B67B *7/00*; B25F *1/00*

U.S. Cl. 81—3.36 5 Claims



1. A gripping tool for removing from a tin a lid having an annular peripheral lip projecting from an upstanding flange, the gripping tool comprising first and second members said first and second members being pivotally inter-connected and having an axis of pivoting off-set from the median longitudinal line of the first member, the axis of pivoting off-set to the upper side of said median longitudinal line and having respective jaw elements at one end and characterized by the first member having its jaw element shaped and dimensioned for insertion under the lip of the lid and tapering to a flat tip of screwdriver-like form; and the second member having its jaw element comprising a first part and a second terminal part, the first part being shaped and dimensioned for extending over and in contact with the lip of the lid and the second terminal part being formed and dimensioned to extend down along and in contact with the flange of the lid and beyond the extreme end of said screwdriver tip for gripping the lid when the tool is closed, whereby the flange and lip are supported and prevented from becoming distorted by upward pressure exerted on the lip by means of the flat tip of the jaw element of the first member when the tool is being used to remove said lid from the tin.

4,327,608

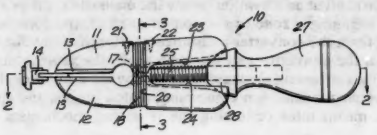
HAND-HELD JEWELER'S CLAMP

C. Brant Keys, P.O. Box 767, North Palm Springs, Calif. 92258

Filed Jun. 23, 1980, Ser. No. 162,099

Int. Cl.³ B25B *5/04*

U.S. Cl. 81—4 1 Claim



1. A vise for clamping jewelry items or the like, comprising:

a pair of facing clamp members forming jaws at one end thereof;

pivot means between the facing portions of said members intermediate the ends of said members, said pivot means comprising concave, semi-cylindrical bearing surfaces formed in and extending across each of said members, and a cylindrical fulcrum pin extending transversely between said members and seated within said bearing surfaces, said bearing surfaces on said clamping members bearing against opposite sides of said fulcrum pin;

a ring snugly surrounding said clamp members directly over said pivot means so as to unyieldingly hold the clamping members together, with said semi-cylindrical bearing surfaces pressed against the fulcrum pin;

said ring comprising a plurality of windings of high-tensile-strength wire; said clamp members having a shallow annular groove formed in the outer surfaces thereof surrounding said fulcrum pin, in which said wire windings are laid; and the ends of said wire being anchored to one of said clamp members; and

adjustable spreading means operable to spread the ends of said clamp members opposite said jaws.

4,327,609

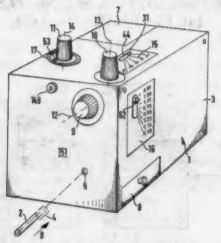
APPARATUS FOR REMOVING THE INSULATION FROM ELECTRICAL WIRES

Alois R. Resch, Heilbronn, Fed. Rep. of Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 19, 1979, Ser. No. 95,874

Int. Cl.³ H02G *1/12*

U.S. Cl. 81—9.51 33 Claims



1. Wire stripping apparatus for removing the insulation from the end of the conductor core of an insulated wire, comprising:

a housing having a hole in one wall for insertion of an end of the insulated wire to be stripped, said hole establishing a reference axis; a chuck mounted at the inside wall of said housing coaxially with said insertion hole, said chuck having jaws operating in a plane and a clamping ring surrounding said jaws, said jaws being disposed in circumferential overlapping relationship, said jaws further being pivotally mounted on an inside wall of said chuck, each

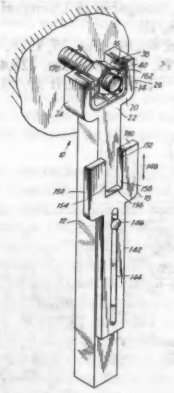
jaw also being pivotally attached at one end to said clamping ring, one of said pivots on each jaw comprising a pin which extends through a slot on said jaw thereby permitting the jaw to slide with respect to said pivot; a knife head in said housing having multiple knives adapted to be separated to define a rest position and to approach each other to define a cutting position at a cutting diameter about a knife axis which coincides with said reference axis, said knife head being mounted so as to be movable along said reference axis; switch means in said housing having a part thereof intersecting said reference axis so that the end of said insulated wire may actuate said switch means after said wire is inserted into said hole and passes through said chuck and said knife head; motor means energized by closure to said switch; and control means, driven by said motor means, providing an operating cycle, whereby said chuck means and said knife head are operated in a timed relationship to clamp the insulated wire to be stripped, to move said multiple knives to said cutting position and cut the insulation, to strip the insulation from the conductor core, to open said chuck means and return said knife head to said rest position, and finally to deenergize said motor.

4,327,610

OPEN END RATCHET WRENCH

Angelo Chiarenza, 393 Sunrise Hwy., West Babylon, N.Y. 11704

Filed Jun. 2, 1980, Ser. No. 155,449
Int. Cl.³ B25B *13/52*
U.S. Cl. 81—64 **8 Claims**



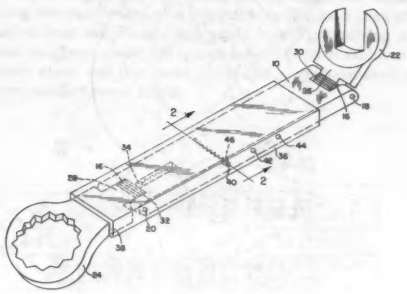
1. An open end ratchet wrench comprising a handle member and a head portion, disposed on said handle member and having a slot opening and a plurality of flexing means mounted on said head member and projecting into said slot opening, with said flexing means each capable of transmitting force along a first direction and capable of flexing when force is applied in a second direction, for the purpose of engaging and turning a nut with forces along said first direction and then flexing to override the corners of the nut thereby creating a ratchet action, said plurality of flexing members comprising a plurality of cantilever spring members mounted on a common member which is mounted on said head portion.

4,327,611

ADJUSTABLE SLEEVE FLEX WRENCH

Salvatore S. Catanese, 25 Almount Rd., Fitchburg, Mass. 01420, and Carmine A. Marchetti, 63 Pierce St., Leominster, Mass. 01453

Filed Aug. 11, 1980, Ser. No. 176,992
Int. Cl.³ B25G *1/12*
U.S. Cl. 81—177.9 **2 Claims**



1. A wrench comprising an elongated handle, a wrench head at one end thereof, a transverse pivot pin in said handle, a recess in the handle at an end thereof, said pin extending through the recess,

the wrench head including an extending portion fitting into the recess, the pin extending therethrough, so that the wrench head is angularly adjustable with respect to the handle on an axis transverse to the length of the handle,

means yieldingly latching the wrench head in its adjusted position,

a sleeve mounted to slide on said handle, said sleeve being adapted to be located in at least two positions in one of which the wrench head is free and in the other position the sleeve partly encompasses the extending portion of the wrench head and the handle and holds the wrench head immobile in prolongation of the wrench handle,

a second wrench head at the opposite end of the handle, a second pivot pin therefor, a second recess, a second extending portion on the second-named wrench head, the second-named pin extending into the second recess and through the second extending portion, and means for yieldingly latching the second-named wrench head in angularly adjusted position with respect to the handle when the sleeve is positioned so as to expose the entire second wrench head and its extending portion,

said sleeve being of a length to free one wrench head while holding the other wrench head immobile.

4,327,612

TURRET LATHE

Johannes Bazuin, Cincinnati, Ohio, assignor to LeBlond Incorporated, Cincinnati, Ohio

Filed Jul. 10, 1980, Ser. No. 167,692
Int. Cl.³ B23B *3/00, 29/00*
U.S. Cl. 82—2 R **17 Claims**

1. A turret lathe having an indexable turret for supporting a plurality of cutting tools selectively movable into a cutting station, said lathe comprising,

a bed,

a carriage longitudinally movable on said bed,

a turret slide transversely movable on said carriage,

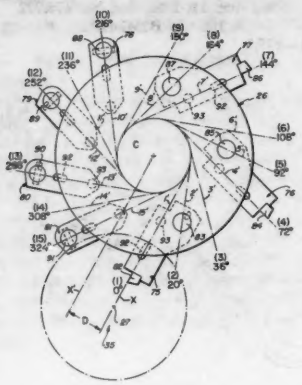
a headstock for rotatably supporting a workpiece,

an indexable tool turret rotatably mounted upon said slide,

a plurality of cutting tool stations upon said tool turret, said tool stations being located at varying angular positions on said turret such that the angular arc between at least one

pair of adjacent stations of said turret is an uneven multiple of the angular arc between other adjacent pairs of stations on said turret,

first motor means for effecting rotational movement of said turret, and



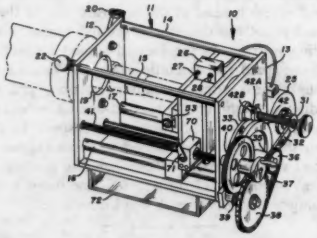
control means for controlling indexing movement of said turret, said control means being operative to actuate said first motor means so as to effect rotational movement of said turret through varying degrees of angular rotation so as to selectively locate any one of said tool stations at said cutting station.

4,327,613

APPARATUS FOR MACHINING AXLE SHAFTS

Curtis W. Melby, 2800 - 36th Ave. NE., Minneapolis, Minn. 55418

Filed Aug. 15, 1980, Ser. No. 178,298
Int. Cl.³ B23B 3/22, 5/28
U.S. Cl. 82—4 R **4 Claims**



1. Apparatus for the in-place machining of spindles of self-propelled motor vehicles and trailer vehicles utilizing a spindle retained along an axle and comprising:

(a) frame means including inner and outer end panels with axially extending bars secured therebetween, said inner end panel having a bore formed therein for receiving a spindle shaft therethrough when said apparatus is secured to a vehicle, centering and clamping means for releasable mounting of said frame means upon said vehicle and providing for portions of said frame means to be secured against the outer surface of said axle at the junction with the spindle and rendered fast therewith;

(b) motor means secured to said frame means and having an output drive pulley, pulley means including a driven pulley and a driven pulley shaft, and an idler pulley means including an idler pulley and an idler pulley shaft, with said pulley shafts being mounted for rotation within said opposed end panels;

(c) first endless drive means drivably coupling said output drive pulley to said driven pulley, and second endless drive means drivably coupling said driven pulley to said idler pulley, and with said driven pulley being fast upon said driven pulley shaft, and said idler pulley being fast upon said idler pulley shaft;

(d) spindle centering means secured for axial movement within said outer panel member and including an elongated shaft threadedly engaged within said outer panel member and having a centering head at the inner face end thereof for releasable engagement with the outer edge of the spindle being machined;

(e) carriage sleeve means journably mounted upon said driven shaft and including a carriage body, a hollow cylindrical housing secured to said body and with a plurality of radially disposed cutting heads coupled thereto in substantially equally arcuately spaced relationship, one with another, and arranged for rotation with said hollow cylindrical housing about said spindle, first drive gear means arranged for arcuate rotation with said driven shaft and for axial movement therealong, and second drive gear means secured to said hollow cylindrical housing for rotation with said hollow cylindrical housing about said spindle being machined;

(f) lead screw shaft means extending between said outer panel means and journably coupled to each of said opposed panel members at opposed ends thereof, and having drive means drivably coupled to said idler shaft for rotation therewith, and drive means secured to said carriage body and engaged with said lead screw shaft means; and

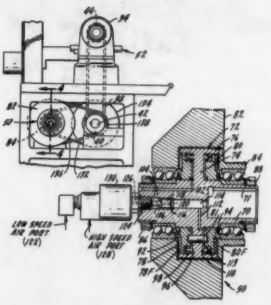
(g) means supportably coupling said carriage body to said lead screw and to said driven shaft.

4,327,614

AUTOMATIC TURRET LATHE

Adolph V. Klancnik, Glenview, and Kenneth A. Klancnik, Palatine, both of Ill., assignors to Universal Automatic Corporation, Des Plaines, Ill.

Division of Ser. No. 60,790, Jul. 25, 1979. This application Jan. 19, 1981, Ser. No. 226,475
Int. Cl.³ B23B 19/00
U.S. Cl. 82—29 R **3 Claims**



1. In a machine tool having a drive motor for a spindle pulley driven by a drive belt connected to a driven pulley on a jack shaft, a clutch interposed between said drive motor and the jack shaft, said clutch comprising:

a flywheel adapted to be connected to the drive shaft of said drive motor;

a pair of pressure plates, one on each side of the flywheel, and keyed for rotation with the flywheel;

one pressure plate being opposed to but normally spaced from a large diameter clutch pulley included in the clutch

and the other pressure plate being opposed to but normally spaced from a small diameter clutch pulley included in the clutch;

each pressure plate cooperating with the opposed surface of the flywheel to define an air cylinder to which air under pressure may be admitted respectively to couple the related pressure plate and opposed clutch pulley;

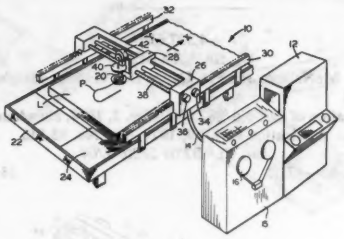
and means affording mutually exclusive air passages for communicating air under pressure to said cylinders.

4,327,615

METHOD AND APPARATUS FOR CUTTING SHEET MATERIAL WITH PREPROCESSED DATA

Heinz J. Gerber, Hartford, and Charles M. Hevenor, Bolton, both of Conn., assignors to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed May 5, 1980, Ser. No. 146,659
Int. Cl.³ D06H 7/00; B26D 1/10
U.S. Cl. 83—49 **26 Claims**



1. Apparatus for cutting pattern pieces from sheet material in accordance with preprocessed marker data comprising:

an automatically controlled cutting machine including a table that supports sheet material being cut, a cutter including a cutting tool, controlled motor means connected with the table and cutter for moving the cutting tool and sheet material on the table relative to one another in cutting engagement and control means connected with the motor means for producing motor command signals to guide the cutting tool along lines of cut in accordance with program data defined by the pattern pieces in the marker; and

preprocessing means connected with the control means of the automatically controlled cutting machine for receiving and processing data defining the pattern piece in the marker prior to use in the control means of the cutting machine to identify in the marker data trouble points of high cutting difficulty including points of close approach, or tangencies and to generate remedial motor command signals, the preprocessing means including window comparator means for detecting potential trouble points of high cutting difficulty from a comparison of rectangular windows about two adjacent pattern pieces, one of the pattern pieces being cut subsequent to the other in a predetermined order established by the program data, and for further identifying critical line segments of the adjacent pattern pieces in overlapping areas of the rectangular windows.

4,327,616

COB SAW

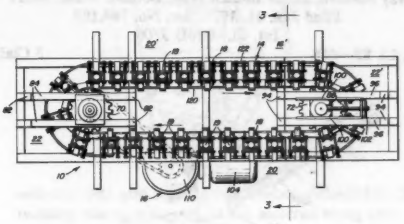
Edward L. Klukis, Salem, Oreg., assignor to Stayton Canning Company Cooperative, Stayton, Oreg.

Filed Feb. 29, 1980, Ser. No. 126,402
Int. Cl.³ B26D 7/06
U.S. Cl. 83—409.2 **9 Claims**

1. In a vegetable transporting and slicing apparatus, the combination of:

at least one vegetable clamp comprising a pair of vertically oriented opposed jaws and having spring biasing means for retaining said jaws in a normally closed relationship, whereby a vegetable may be retained and transported thereby, said at least one vegetable clamp being connected to an individual link of a conveyor chain;

guide means connected in operative relation to said at least one vegetable clamp for causing said jaws to move to an open position against said spring biasing means for facilitating the positioning of a vegetable within said jaws of said at least one clamp, said guide means comprising at least one inner guide rail spaced inwardly from said conveyor chain and one outer guide rail spaced outwardly from said conveyor chain;



vegetable support means for further facilitating a positioning of said vegetable within said at least one clamp and including a pair of elongated opposed support members, each of said support members being adjustable in height;

shearing means comprising a pair of shearing blades connected in a vertically spaced disposition; and

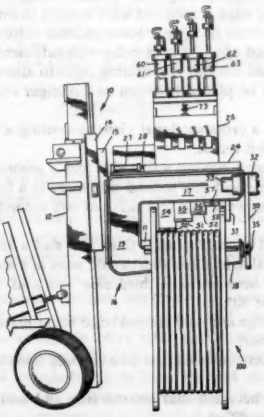
movement means connected to said conveyor chain for causing movement of said at least one vegetable clamp between said shearing blades, thereby to facilitate a slicing of said vegetable being retained and transported by said at least one clamp.

4,327,617

COIL REMOVAL APPARATUS

Mieczyslaw Budzich, and Forest G. Fitz, Jr., both of Lexington, S.C., assignors to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Jan. 30, 1980, Ser. No. 116,728
Int. Cl.³ B26D 5/04, 7/01
U.S. Cl. 83—419 **4 Claims**



1. Apparatus for removing coils of scrap wire from about a

reel having a hub straddled by two flanges and with the apparatus comprising an array of juxtaposed cutting blades mounted in mutually parallel succession with adjacent blades in sliding contact with one another and with adjacent side portions of adjacent blades overlaying one another; means for reciprocally driving each of said cutting blades independently along a different path in a group of mutually juxtaposed paths; and means for supporting the reel with the reel flanges straddling at least a portion of said group of paths and with the reel hub positioned closely adjacent an end of said group of paths.

4,327,618

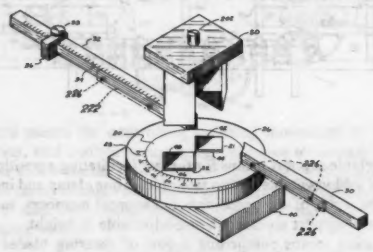
APPARATUS FOR CUTTING A STRIP OF MATERIAL

Harvey Menard, 21125 Bothell Way, Bothell, Wash. 98011

Filed Jan. 31, 1977, Ser. No. 764,193

Int. Cl.³ B26D *3/00*

U.S. Cl. 83—468 **5 Claims**



1. A machine for processing strip material to a desired length and the ends of the strip material to desired angles to realize processed strip material, said machine comprising:

a. a severing means;

b. a length positioning means for positioning said strip material with respect to said severing machine for processing said strip material to said desired length;

c. an angle positioning means for positioning said strip material with respect to said severing machine for processing the ends of said strip material to desired angles;

d. said severing machine and said strip material being rotatable with respect to each other to form said strip material into said processed strip material;

e. said plunger having a guide means and a cutting edge for moving in said recess;

f. said plunger being longer than said cutting edge so that said cutting edge is recessed with respect to said plunger;

g. said plunger can be in said recess and said cutting edge can be positioned apart from said die with sufficient clearance between said die and said cutting edge to allow said strip material to be placed between said plunger and said cutting edge;

h. said die in a cross-sectional view presenting a first recess and a second recess;

i. said first recess having a first side and a second side;

j. said first side and said second side meet at a first edge;

k. the angle between said first side and said second side being about 90°;

l. said second recess having a third side and a fourth side;

m. said third side and said fourth side meet at a second edge;

n. the angle between said third side and said fourth side being about 90°;

o. said first edge and said second edge being juxtapositioned to each other;

p. the angle between said first side and said fourth side being about 90°;

q. the angle between said second side and said third side being about 90°;

r. said die having a first cutting edge, a second cutting edge, a third cutting edge, and a fourth cutting edge;

s. the angle between said first cutting edge and said second cutting edge being about 90°;

t. said first cutting edge and said second cutting edge forming a first junction;

u. the angle between said third cutting edge and said fourth cutting edge being about 90°;

v. the angle between said first cutting edge and said fourth cutting edge being about 90°;

w. the angle between said second cutting edge and said third cutting edge being about 90°;

x. said third cutting edge and said fourth cutting edge forming a second junction;

y. said first junction and said second junction being spaced apart;

z. said first cutting edge, said second cutting edge, and said first junction: being movable in said first recess for severing said strip material; and,

aa. said third cutting edge, said fourth cutting edge, and said second junction being movable in said second recess for severing said strip material.

4,327,619

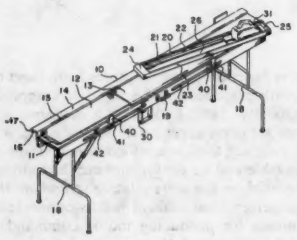
SAW TABLE

John J. McNamee, Jr., 516 Guyer Dr., Haddon Heights, N.J. 08034

Continuation of Ser. No. 882,600, Mar. 2, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,315

Int. Cl.³ B27B *5/20, 9/04*

U.S. Cl. 83—471.3 **14 Claims**



1. A saw table comprising:

(a) A table having a surface the length of which is substantially longer than the width capable of holding metal, wood, plastic or composition sheets substantially in the form of building siding, the table having a front edge and a rear edge, both along the length of the table,

(b) a back stop rail substantially along the entire length of the rear edge, having a top extending above the table surface,

(c) a power saw guide means comprising:

(1) a horizontal plate having a width at least that of the power saw face plate,

(2) a slot the length of the horizontal plate wide enough to allow the power saw blade to extend downwardly through the slot and below the horizontal plate, and

(3) edge guide means along the length of the horizontal plate to prevent the saw from slipping off the saw guide and to provide a positive straight line cutting guide,

(d) a saw guide attachment hinge means to attach saw guide means at one end to the top of back stop rail to hold the saw guide means cantilevered over the table surface with sufficient vertical play in the attachment to allow the free end of the saw guide means to be pressed on the sheet to be cut, holding it to the table surface and against the back stop rail,

(e) a pivot means between the hinge means and rail to allow pivoting the saw guide at angles in a plane horizontal to the back stop rail, and

(f) a pitch stop means, adjustable to any chosen pitch of the

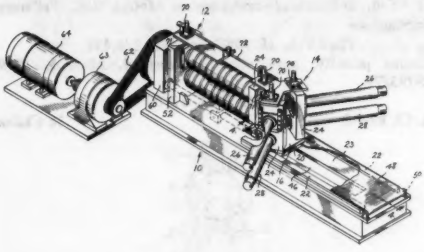
miter cut by which the saw guide means is held during the cutting process.

4,327,620

SLITTER HAVING PIVOTAL MULTIPLE SPACED PAIRS OF ARBORS

James Greinke, Round Lake Beach; Douglas Matsunaga, Vernon Hills, and Eric W. Mosquera, Schaumburg, all of Ill., assignors to Braner Enterprises, Schiller Park, Ill.

Continuation of Ser. No. 894,741, Apr. 10, 1978, Pat. No. 4,183,273. This application Jan. 7, 1980, Ser. No. 109,766
The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.
Int. Cl.³ B26D *1/00;* B23D *19/00*
U.S. Cl. 83—479 10 Claims



1. In a slitter including a frame, first and second spaced bearing housings carried by said frame, multiple spaced pairs of arbors carried by said first bearing housing, each pair of arbors journaled at one end within said first bearing housing, each arbor adapted to carry removable cutters, the improvement comprising support means mounting said first bearing housing for rotational movement about a vertical axis relative to said frame, means for shifting said support means toward and away from said second bearing housing, each pair of arbors being alignable with said second bearing housing upon pivotal movement of said first bearing housing, a selected pair of arbors being supported by said first and second bearing housings when the first bearing housing is shifted toward the second bearing housing and the outer ends of said selected pair of arbors are journaled within the second bearing housing.

4,327,621

SELF STEERING BLADE GUIDE FOR A BAND SAW

John E. Voorhees, Sidney, and Thomas M. Johnson, Troy, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

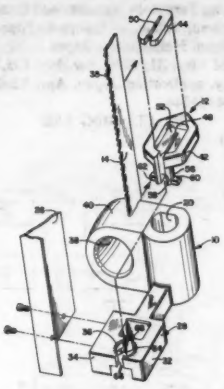
Filed Oct. 26, 1979, Ser. No. 88,490
Int. Cl.³ B27B *13/10;* B26D *1/54*
U.S. Cl. 83—820 8 Claims

1. A guide for a band saw blade having a forward cutting edge, a back edge and flat sides, the guide comprising:

a support block disposable in fixed position adjacent said saw blade;

a steering block having a blade receiving slot defined therein with side surfaces adjacent said flat sides of said blade and engagable therewith upon sideways deflection of said blade; and

means mounting said steering block on said support block for free pivotal movement about an axis parallel to said blade and approximately in the center of or forward of said cutting edge, so that said blade is free to pivot about



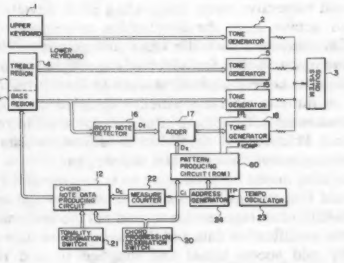
said axis with said steering block when deflected by blade twisting due to resistance of the material being cut.

4,327,622

ELECTRONIC MUSICAL INSTRUMENT REALIZING AUTOMATIC PERFORMANCE BY MEMORIZED PROGRESSION

Eiichiro Aoki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 20, 1980, Ser. No. 161,582
Claims priority, application Japan, Jun. 25, 1979, 54-79918
Int. Cl.³ G10H *1/38, 1/42*
U.S. Cl. 84—1.03 7 Claims



1. A system for producing chord progressions automatically in an electronic musical instrument, comprising:

chord progression pattern means for automatically producing, at a certain tempo, consecutive signals each indicative of a constituent chord in a certain prestored chord progression pattern, independent of tonality, and

data conversion means, responsive to a tonality designating signal, for converting each of said consecutive chord indicative signals into a set of signals specifying the notes of the corresponding chord and designated tonality, said set of signals being utilized by said electronic musical instrument to produce corresponding tones,

whereby a progression of chords is produced automatically with a designatable tonality at said certain tempo.

4,327,623

REFERENCE FREQUENCY SIGNAL GENERATOR FOR TUNING APPARATUS

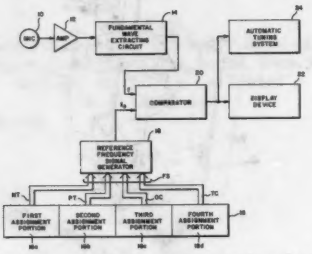
Yasunori Mochida; Terumoto Nonaka, and Osamu Hanagasaki, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 31, 1980, Ser. No. 135,700

Claims priority, application Japan, Apr. 12, 1979, 54/44543; Apr. 12, 1979, 54/44544

Int. Cl.³ G10G 7/02

U.S. Cl. 84—454 6 Claims



1. A reference frequency signal generator for a tuning apparatus which selectively generates reference frequency signals in accordance with at least one tuning characteristic, comprising:

means for producing a source signal having a fixed frequency;

frequency varying means receiving said source signal to produce a reference frequency signal of a target frequency through frequency calculation with respect to said source signal, said frequency varying means carrying out said frequency calculation in accordance with calculation data which represents factors for said frequency calculation;

storage means which comprises a first storage section for storing fundamental data corresponding to frequencies of respective notes in at least one octave in a musical scale, a second storage section for storing modification data for said respective notes designating pitch deviations within an octave from the frequencies corresponding to said fundamental data and a third storage section for storing tuning curve data for selectively specifying tuning characteristics covering plural octaves to form a tuning curve;

an arithmetic operation means coupled to said storage means for producing said calculation data in response to said fundamental data, said modification data and said tuning curve data supplied thereto; and

accessing means for producing an access signal for accessing said first storage section, said second storage section and said third storage section to read out the fundamental data, the modification data and the tuning curve data addressed by said access signal and supplied to said rhythmatic operation means whereby said frequency varying means produces the reference frequency signal having a target frequency specified by said access signal.

4,327,624

TIP OFF RATE REDUCER

Edward T. Piesik, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jun. 23, 1980, Ser. No. 162,290

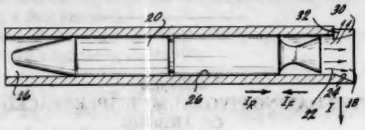
Int. Cl.³ F41F 3/04

U.S. Cl. 89—1.816 7 Claims

1. In a missile-launcher system, a launcher tube with a forward end from which a missile exits upon firing and an aft end from which gases exhaust as a missile exits from the launcher tube,

means on the aft end of said launcher tube against which said exhaust gases impinge for reducing the recoil imparted to the launcher tube as the missile is fired,

the improvement comprising,



means forming part of said recoil reducing means for reducing the tip-off rate of the launcher tube during firing.

4,327,625

DEVICE FOR TRANSMITTING SIGNALS TO A FUSE

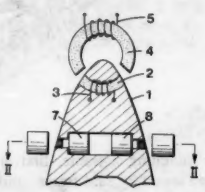
Roger Beuchat; Pierre-Alain Charmoy, and Remy Damond, all of Vaud, Switzerland, assignors to Mefina S.A., Fribourg, Switzerland

Filed Feb. 21, 1980, Ser. No. 123,417

Claims priority, application Switzerland, Mar. 5, 1979, 2128793/79

Int. Cl.³ F42C 17/00

U.S. Cl. 89—6 10 Claims



1. A device for transmitting an energy signal and information carrying signals relative to a mode of operation and/or to the firing delay of a projectile fuse, said device comprising an emitter member positioned outside the fuse a receiving member positioned inside the fuse, and at least one magnetic induction circuit whereby the energy signal may be transferred by at least one magnetic induction circuit, and at least one non-magnetic circuit for permitting the transfer of information carrying signals by wave propagation.

4,327,626

SUBMACHINE GUN HAVING A PISTOL GRIP 360 DEGREES ROTATIVE ABOUT THE BARREL

Sidney J. McQueen, 414 Coors Blvd., SW., Albuquerque, N. Mex.

Filed Aug. 28, 1980, Ser. No. 182,096

Int. Cl.³ F41D 7/08

U.S. Cl. 89—197 1 Claim

1. A submachine gun comprising a barrel, a forward housing, a rear housing, a bolt body, an assembly collar, a forward assembly nut, a butt plug, a recoil buffer spring and a bolt spring wherein;

the barrel is threaded into the assembly collar, and the assembly collar has shoulder wih a plurality of spring balls, which rotatably engages the forward housing, and;

the assembly collar having a chamber for receiving and guiding ammunition and slots on each side through which side rails slide, and the rear housing having a slot in its top and having a magazine housing and;

the bolt body comprising a rear bolt, a forward bolt, and two side rails wherein the two side rails are rigidly affixed one on each side to the forward bolt and the rear bolt and;

the rear bolt containing a firing pin and extractor mechanism

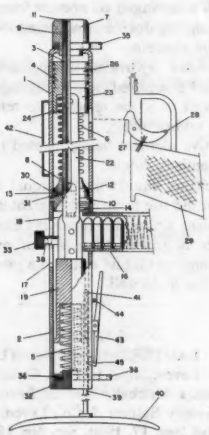
and being slideably inserted in the rear housing, and having a tap on its top, and;

the assembly collar having a ring flange to which the rear housing is rigidly affixed, and the assembly collar having slots on each side, and the two side rails being rigidly affixed one on each side of the rear bolt, said rails protruding forward past the slots on the assembly collar, and said side rails being rigidly affixed to the forward bolt, and;

the forward bolt having in its rear a spring recess to engage the bolt spring, and said forward bolt having in its forward end a multiplicity of ring grooves, and;

the bolt spring slideably installed over the barrel and between the assembly collar and the forward bolt, and;

the forward housing having a shoulder at its rear end, said shoulder having detents to accept the spring balls in the assembly collar, said shoulder in the forward housing being rotatably mated with the shoulder on the assembly collar, and the front of the forward housing being rotatably sized to slide over the barrel, a sling swivel rotatably slid over the muzzle nut, and the muzzle nut threaded onto the muzzle end of the barrel to secure the forward housing rotatably in place,



the forward housing having the trigger mechanism, pistol grip and sear, said sear mateably engaging the multiple ring grooves on the forward bolt, and;

a knurled bolt knob which is inserted through the slots in the top of the rear housing and affixed to the top of the rear bolt, and;

the recoil spring assembly is installed in the rear of the rear housing and secured therein by a butt plug threaded or pinned into the rear housing, said butt plug having a rear sling swivel rotatably mounted thereon, and;

a sight bridge rigidly affixed to the front housing, and;

an adjustable stock having generally a body pad rotatably mounted on two extension arms each of which has notches, said extension arms slideably mating with channels in the rear housing and;

a stock latch pivotally mounted on the bottom of the rear housing, said stock latch having two latch hooks each hook engaging notches on one of the extension arms, and said stock latch being biased in the latched position by a latch spring.

4,327,627

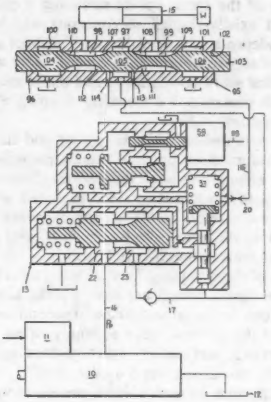
LOAD RESPONSIVE FLUID CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 109,806, Jan. 7, 1980. This application Jan. 11, 1980, Ser. No. 111,194

Int. Cl.³ F15B *13/04*

U.S. Cl. 91—446 **54 Claims**



39. A valve assembly comprising a housing having an inlet chamber connected to a pump, a supply chamber connected to a fluid motor, and exhaust means, control orifice means interposed between said supply chamber and said fluid motor, first valve means having fluid throttling means between said inlet chamber and said supply chamber controllable by a pilot valve means and operable to throttle fluid flow from said inlet chamber to said supply chamber to maintain a constant pressure differential at a preselected constant level across said pilot valve means and to maintain a constant pressure differential across said control orifice means.

4,327,628

HYDRAULIC ROOF SUPPORT CONTROL SYSTEM

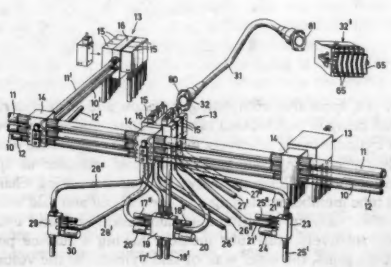
Walter Weirich, Dortmund, and Michael Dettmers, Kamen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westialia, Fed. Rep. of Germany

Continuation of Ser. No. 869,014, Jan. 10, 1978, abandoned. This application Jun. 24, 1980, Ser. No. 162,546

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1977, 2700829

Int. Cl.³ F15B *11/16*

U.S. Cl. 91—522 **23 Claims**



1. A hydraulic control system for a mine roof support assembly constituted by a plurality of roof support units positioned side-by-side, the control system comprising:

(a) a respective control valve assembly associated with each of the roof support units,

(b) each control valve assembly including a plurality of control valves each of which controls a respective hydraulic appliance associated with the corresponding roof support unit,

(c) each control valve including two servo valves each of which controls said respective hydraulic appliance,

(d) each of the servo valves including a pair of first and second axially-aligned servopistons which are separate and independently operable with respect to each other, the first servopistons of each control valve assembly defining a first set of servopistons, and the second servopistons of each control valve assembly defining a second set of servopistons,

(e) each servopiston of each pair of said first and second axially-aligned servopistons being separately and independently effective to open the associated servo valve,

(f) a respective actuating device mounted in the region at each roof support unit, the actuating devices being connected to the control valve assemblies of adjacent roof support units by multi-core hoses,

(g) each of the actuating devices being effective to initiate control signals which are sent, via the associated multi-core hose, to one of said first and second sets of servopistons of the control valve assembly of an adjacent roof support unit, said one set of servopistons being effective to open the associated servo valves, and

(h) a respective manual control device mounted on each control valve and effective to open directly the servo valves of that control valve.

4,327,629

SEAL FOR A CYLINDER-PISTON ARRANGEMENT

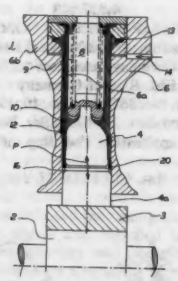
Bernhard Frey, Schaffhausen, Switzerland, assignor to Hydrowatt Systems Limited, London, England

Filed Apr. 9, 1980, Ser. No. 138,573

Claims priority, application Switzerland, Apr. 18, 1979, 3633/79

Int. Cl.³ F01B *19/04*; F01M *1/04*

U.S. Cl. 92—86.5 **11 Claims**



1. An apparatus comprising a piston and a cylinder, said piston being in part located in said cylinder and said piston and said cylinder being relatively movable, an elastic tube member sealingly engaging said piston and said cylinder at spaced locations and at least partially defining a working chamber, said tube member stretching and contracting and said working chamber varying in volume as said piston and said cylinder move relatively, said tube member having a surface portion sliding against the inner wall of said cylinder as the volume of said working chamber varies, and a ring member encircling said tube member and located between said tube member and said inner wall of said cylinder in the region of connection of said tube member with said piston for minimizing outward deformation of said tube member, said ring member being elastically deformable and having a compression prestress directed radially inward.

4,327,630

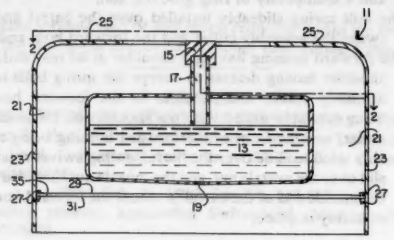
HUMIDIFIER

Robert L. Brassine, 3421 Glenn-Don, #2, Anchorage, Ak. 99504

Filed Jun. 11, 1980, Ser. No. 158,438

Int. Cl.³ B01F *3/04*

U.S. Cl. 98—105 **27 Claims**



1. A humidifier arranged to operate in conjunction with a temperature changing device comprising:

an evaporative element,

a heat responsive hydrocell having a liquid outlet from which liquid is emitted, and being adapted to receive a liquid as well as to be exposed to temperature changes created by said device,

said evaporative element being located in a position to receive said emitted liquid,

means for emitting liquid thru the liquid outlet when the air pressure within the hydrocell is greater than the pressure of the ambient air and for receiving air when the ambient air pressure is greater than the air pressure within the hydrocell, and said liquid outlet is a pinhole located in the bottom of the hydrocell.

4,327,631

LAUTERING APPARATUS

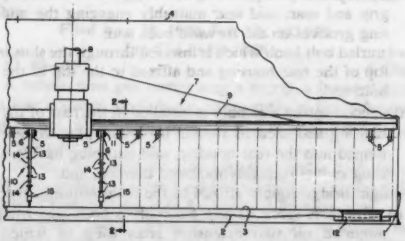
David K. Smith, Leven; Nigel Harlow, Cupar; Samuel W. Maxfield, and James Mitchell, both of Leven, all of Scotland, assignors to Henry Balfour & Co., Leven, Scotland

Filed Sep. 17, 1980, Ser. No. 188,175

Claims priority, application United Kingdom, Oct. 25, 1979, 36994/79; Nov. 27, 1979, 40903/79

Int. Cl.³ C12G *1/00*

U.S. Cl. 99—277.2 **10 Claims**



1. Lautering apparatus including a vessel for materials to be treated, a rotary lautering machine in the vessel having horizontal arms and a plurality of vertically oriented blades fixed to each arm, wherein the improvement comprises:

(a) a sweeping foot pivotally mounted to the lower end of each vertically oriented blade, each foot being adapted to

pivot with respect to its associated blade about a vertical axis positioned intermediate the ends of each foot;

(b) actuating means associated with each foot and force reacting with the material in the vessel for pivoting each foot from a first lautering position during rotation of said machine in one direction wherein each foot is aligned with its associated blade, to a second sweeping position during rotation of said machine in a reverse direction wherein each foot extends transverse to its associated blade; and

(c) cooperating stop means on each foot and its associated blade to limit the pivotal movement of said feet between predetermined lautering and sweeping positions.

4,327,632

BEVERAGE MAKER

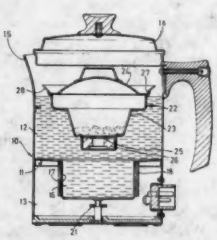
Cyril Batty, Lymm, and John L. Cooper, Stoke-on-Trent, both of England, assignors to Russell Hobbs Limited, Staffordshire, England

Filed Mar. 9, 1977, Ser. No. 775,874

Claims priority, application United Kingdom, Mar. 16, 1976, 10417/76

Int. Cl.³ A47J *31/00*

U.S. Cl. 99—320 **4 Claims**



1. A beverage maker comprising a chamber for containing a body of water constituting a primary constituent which is to be heated and a receptacle having a space for receiving a secondary constituent which forms a beverage when infused with the heated water, the receptacle being disposed in the chamber, characterised in that the receptacle has an imperforate bottom portion to enable the receptacle to sink when a sufficient amount of the water occupies said space, the receptacle having mass means to enable the receptacle to float in the chamber on quiescent water indefinitely when containing only the secondary constituent where said imperforate bottom portion prevents the quiescent water from entering said receptacle and thereby prevents the quiescent water from sinking said receptacle, an upper portion of the receptacle defining an opening in flow communication with said space through which the water can be splashed into said space of the receptacle for mixing with the secondary constituent when the water is agitated by boiling and the receptacle being adapted to be sunk by the water which splashes in through the opening, whereby the secondary constituent within said receptacle is maintained out of contact with the water until the water boils, and where extensive contact between the water and the secondary constituent is promoted to form the beverage when said receptacle is sunk.

4,327,633

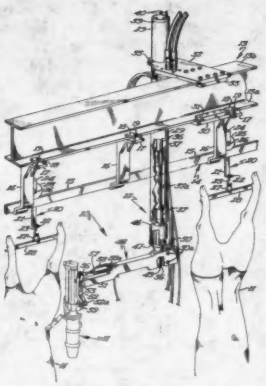
HAM SKINNING APPARATUS

Lyndon R. Leining, and Kent L. Simonson, both of Austin, Minn., assignors to Geo. A. Hormel & Co., Austin, Minn.

Continuation-in-part of Ser. No. 73,736, Sep. 10, 1979, abandoned. This application May 4, 1981, Ser. No. 259,906

Int. Cl.³ A22B *5/16*

U.S. Cl. 99—589 **9 Claims**



1. A skinning apparatus for removing skin from the ham area of a hog carcass, comprising:

a skinning device including a generally vertically oriented housing having a hollow interior and having elongate, generally vertically oriented infeed and outlet openings therein, said openings being spaced apart relative to each other,

an elongate vertically oriented tooth roller revolvably mounted within said housing for revolving movement relative thereto,

an elongate generally vertically oriented skinning blade having a cutting edge, means mounting said blade on said housing adjacent said infeed opening to position the cutting edge of the blade closely adjacent the tooth roller each having a length dimension corresponding generally to the length dimension of the ham area of a hog whereby said tooth roller will grip the skin of the hog carcass and pull the same against the cutting edge of the blade to remove the skin from both ham areas of the hog carcass in a single pass,

an elongate generally vertically oriented stripper bar having a plurality of stripper elements projecting therefrom, means mounting said stripper bar on said housing adjacent said outlet opening to position the stripper elements in close tangential relation to the tooth roller whereby the skin gripped by the tooth roller and removed from the ham area of the hog carcass will be engaged by the stripper bar and directed through the outlet opening,

first power means secured to said housing at the lower end thereof and being operable for selectively revolving said tooth roller in a clockwise and counterclockwise direction, said first power means having an output shaft connected in driving relation with the tooth roller to revolve the same when said first power means is energized, control means connected with said power means for actuating and controlling the latter,

a suspension device including a stationary support, an elongate vertically disposed suspension member, second power means connected with said stationary support, means interconnecting said second power means with the upper end of said suspension member to permit rotation and vertical translation of the suspension member relative to the stationary support, means connecting the lower end of said suspension member with said skinning device to

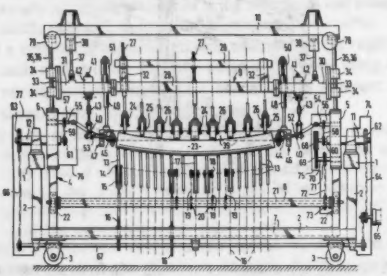
permit tilting of said skinning device about a substantially horizontal axis, and control means for controlling operation of said second power means to permit vertical translation of the suspension member and vertical shifting of the skinning device.

4,327,634

APPARATUS FOR ASSEMBLING SHEETS OF GLASS AND/OR PLASTIC MATERIALS

Daniel Colmon, and Francis Triffaux, both of Thourotte, France, assignors to Saint-Gobain Vitrage, Neuilly-sur-Seine, France

Filed Feb. 21, 1980, Ser. No. 123,350
Claims priority, application France, Feb. 21, 1979, 79 04337
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—155 G **26 Claims**



1. An apparatus for the manufacture of laminated glazings, comprising:

lower pinching means having a curvature corresponding to the curvature of the lower surface of the glazing to be assembled considered transversely to its direction of displacement, upper pinching means comprising a flexible cylindrical pressure roller disposed above the lower pinching means, said upper and lower pinching means being at least equal to the width of the elements to be assembled, means bearing on the upper outer periphery of said pressure roller to give it a curvature corresponding to the curvature of the upper surface of the glazing to be assembled considered transversely to its direction of displacement, and to maintain said pressure roller in its curved operational position, said means bearing on the upper outer periphery of said pressure roller comprising a series of wheels placed side by side, and drive means for rotating at least one of said pinching means.

4,327,635

INDEXABLE MARKING WHEEL

Calvin E. Kelly, Murrysville, and Robert A. Wilshire, Monroeville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 29, 1980, Ser. No. 154,556
Int. Cl.³ B41F *17/26*
U.S. Cl. 101—18 **7 Claims**

1. A marking apparatus, comprising:

an axially rotatable wheel having an annular flange with circumferentially spaced slots extending radially therethrough,

a plurality of stamps mounted in said slots and each having marking indicia on one end thereof adjacent the outer periphery of said wheel and a convex curved surface on the opposite end thereof adjacent the wheel axis,

said stamps being slidable in the radial direction in said slots and of greater length than said slots in said radial direction,

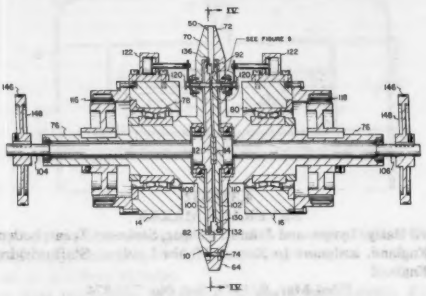
said stamps each having a lateral extension, generally parallel to the wheel axis, on a portion thereof protruding from the end of the slots adjacent the wheel axis,

an axially rotatable disc having the axis thereof lying in a direction coincident with the axis of said wheel,

said disc having a circumferential first slot and a substantially circular second slot located in a radial sidewall of the first slot loosely receiving the lateral extensions of said stamps so as to generally retain said stamps in a position retracted from the periphery of the wheel,

said disc also having a radially protruding curved cam surface on a wall of the first slot which extends generally parallel to the disc axis,

said second disc slot having a segment curving radially outward from and inward rejoining the balance of the



circular portion thereof at a location adjacent said cam surface,

said segment having a contour substantially the same as said cam surface so as to permit a stamp contacted on the curved end thereof by said cam surface to slide radially outward and inward in said slot until the marking indicia on said stamp protrudes from the periphery of the wheel,

means for selectively securing said disc to said wheel,

means for selectively stopping said wheel to prevent angular rotation thereof, and

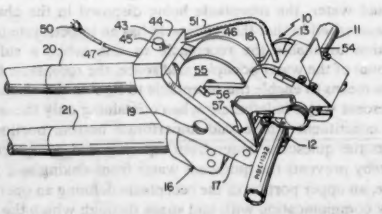
means for rotating said disc while said wheel is stopped to select different stamps for marking a product.

4,327,636

APPARATUS FOR MARKING AN ELONGATE ARTICLE

Richard D. Carey, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Jul. 25, 1980, Ser. No. 172,097
Int. Cl.³ B41F *1/07*
U.S. Cl. 101—29 **9 Claims**



1. In an apparatus for marking an elongate article comprising, a backup structure for supporting said article thereon, a device having electrically heated character means adapted to be imprinted on said article, and means for moving said device and its character means toward and away from said backup structure and article supported thereon to enable imprinting said article with desired character means, said character means comprising a plurality of pins, said pins having heated working ends normally disposed in a retracted position, and means for

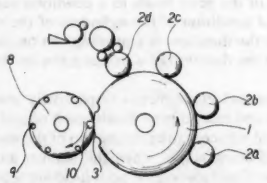
positioning selected ones of said pins to position associated working ends thereon from said retracted position to a working position, said working ends of said selected ones of said pins cooperating to imprint a particular character on said article upon movement thereof by said moving means, said device comprising a support block having opposed ends and a plurality of elongate openings extending therethrough, each of said openings being defined by associated surface means slidably supporting an associated pin for rectilinear movements between said retracted and working positions, the improvement wherein each of said openings has a large section interrupting one of said ends of said block and a small section interrupting the other of said ends of said block, each of said pins having a large section disposed in said large section of its respective opening and a small section disposed in said small section of its respective opening, said positioning means being respectively disposed in said large sections of said openings and respectively having shoulder means, said large section of each said pin having shoulder means for abutting said shoulder means of its respective positioning means when that respective pin is in its retracted position, said large section of each said pin having opposed ends one of which is said shoulder means thereof and the other end defining said working end thereof, said shoulder means being so constructed and arranged that said working end of each said pin is substantially flush with said one end of said block when that respective pin is in its retracted position.

4,327,637

APPARATUS FOR FOUR-COLOR HALFTONE PRINTING

Hikoichiro Fujimori, Osaka, Japan, assignor to Takeuchi Press Industries Co., Ltd., Toyama, Japan

Division of Ser. No. 954,246, Oct. 24, 1978, Pat. No. 4,241,657.
This application Jun. 20, 1980, Ser. No. 161,367
Claims priority, application Japan, Jul. 15, 1978, 53/86356
The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.
Int. Cl.³ B41F *17/08*
U.S. Cl. 101—40 **1 Claim**



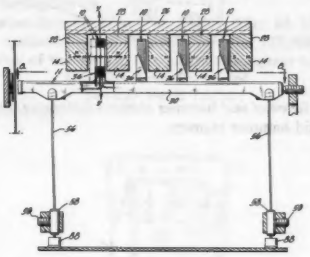
1. In a four-color halftone curved surface printing apparatus comprising a blanket cylinder, four block cylinders arranged around said blanket cylinder, and mandrels for supporting an object to be printed, the improvement wherein said blanket cylinder includes first and second transfer areas, said two transfer areas being positioned sequentially in the circumferential direction of the blanket cylinder, a first ink layer positioned on said first transfer area, a second ink layer positioned on top of said first ink layer, a third ink layer positioned on said second transfer area, and a fourth ink layer positioned on top of said third ink layer, wherein four ink layers have different tackiness values, said first ink layer having the highest and said fourth ink layer having the lowest, the tackiness value between each of the four layers being at least 1, such that said ink layers are adapted to be transferred in order from said blanket cylinder onto the object.

4,327,638

MAGNETICALLY ACTUATED EQUIPMENT

Carl I. Wassermann, Great Neck, N.Y., assignor to North Atlantic Industries, Inc., Hauppauge, N.Y.

Division of Ser. No. 887,293, Mar. 13, 1978, Pat. No. 4,242,955.
This application Mar. 13, 1980, Ser. No. 130,148
The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.
Int. Cl.³ B41J *9/12*
U.S. Cl. 101—93.09 **9 Claims**



1. Magnetically actuated equipment for use in a printer or the like comprising a group of permanent magnets, the magnets of said group being in side-by-side relationship and being displaced with respect to one another so that gaps are formed between adjacent magnets in the group, said magnets being polarized so that each has a pair of oppositely disposed surfaces of opposite polarity and being positioned so that the surfaces of like polarity of adjacent magnets are presented toward one another across the gaps between the said adjacent magnets in the group, the like poles of the magnets in said group being spaced in proximity to one another to form fields having field portions extending generally parallel to the surfaces defining the gaps and in opposite directions from a neutral axis within each gap, the proximity of the magnets producing an amplification of flux density in said field portions, generally planar conducting coils movably mounted within said gaps, an impact member associated with each coil for movement upon movement of said coil, means for independently electrically exciting each coil whereby pulsed magnetic fields are established when said coils are excited, each said coil being disposed within a gap with the coil axis extended transversely of said surfaces of like polarity, each said coil being wound upon a support of non-magnetic material and having oppositely disposed leg portions located within the oppositely extending field portions.

4,327,639

PRINT HAMMER ASSEMBLY WITH MULTI-LOCATION IMPACTS

Richard G. Crystal, Los Altos; Andrew Gabor, Alamo, and Enrique J. Klein, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 5, 1979, Ser. No. 91,605
Int. Cl.³ B41J *9/30*
U.S. Cl. 101—93.34 **5 Claims**

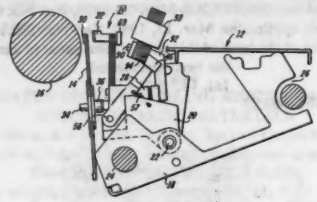
1. A print hammer assembly for use with a platen upon which a record receiving member may be supported, a movable print element bearing a plurality of print characters, and means for moving said print element from character to character and for stopping said print element for impaction, said hammer assembly comprising:

a hammer element;

hammer actuator means for moving said hammer element under force toward said platen and against said print element, when said actuator means is energized; and

spring means coupled to said hammer element for causing said hammer element to impact said print element more

than one time for each energization of said hammer actuator means and for altering the location of maximum im-



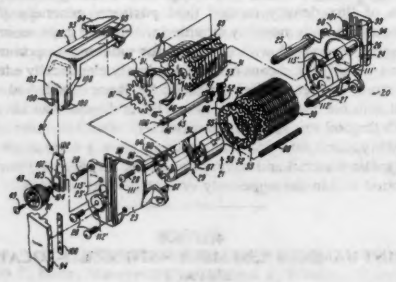
pact force of said hammer element following initial impact of said hammer element.

4,327,640

SELECTIVE PRINTING APPARATUS

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 95,854, Nov. 19, 1979. This application Jan. 13, 1981, Ser. No. 224,779
Int. Cl.[3] B41J 1/60
U.S. Cl. 101—110 12 Claims



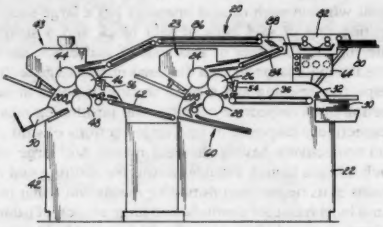
1. In a print head: a wheel having a generally annular base, a pair of separate first and second sockets in the base disposed inwardly from the outer periphery of the base, a narrow first gap opening into the first socket and extending to the outer periphery of the base, a narrow second gap opening into the second socket and extending to the outer periphery of the base, elongate band having first and second lugs at its opposite first and second end portions, the band being received about the base and having indicia at its outer surface, the first lug being wider than the first gap, the second lug being wider than the second gap, the first end portion being received in the first gap and the first lug being received in the first socket, and the second end portion being received in the second gap and the second lug being received in the second socket, wherein the first socket and the first lug are dissimilar from the second socket and the second lug.

4,327,641

DUAL-HEAD DUPLICATOR WITH ALTERNATE SIMPLEXING CAPABILITY

Eber L. Goodwin, Arlington Heights; Thomas J. Borke, Hoffman Estates, and Joel D. Armstrong, Antioch, all of Ill., assignors to AM International, Inc., Chicago, Ill.

Filed Oct. 21, 1977, Ser. No. 844,417
Int. Cl.[2] B41F 9/00
U.S. Cl. 101—144 6 Claims



1. A rotary lithographic duplicator for printing copy paper sheets, said duplicator comprising:

a first print head including a blanket cylinder and an impression cylinder forming a first printing nip;

a second print head in tandem with said first print head and including a blanket cylinder and an impression cylinder forming a second printing nip;

means included in each impression cylinder of said first and second print heads for holding the lead margin of each copy sheet against the impression cylinder as the copy sheet passes between that impression cylinder and its associated blanket cylinder;

cylinder control means associated with each print head for causing printing engagement between the blanket cylinder and the impression cylinder or separation of the blanket cylinder and impression cylinder;

means for preparing each print head for operation including blanket cleaning means and master preparation means;

means for selectively activating said cylinder control means on each of the print heads to a condition maintaining the separated condition of the cylinders of the selected print head for the duration of a printing run on the other print head for the duration of a printing run on the other print head;

first and second guide means respectively associated with said first and second print heads, each of said guide means positioned adjacent the printing nip of the associated print head and being active when the blanket and impression cylinders of said associated print head are separated by the activation of the associated cylinder control means for keeping each sheet whose lead margin is being held by the associated holding means out of contact with the surface of the blanket cylinder of said associated print head, each guide means comprising a plate having a lip closely approaching the nip of the blanket and impression cylinders of the associated print head on the sheet approach side of the nip, said lip of said plate extending toward the surface of the associated impression cylinder so that, when the cylinders of said associated print head are separated while the other print head is printing, said plate causes each approaching sheet, whose lead margin is being held by the associated holding means to be channeled toward the surface of the associated impression cylinder; and

control means for automatically alternately (1) actuating said print head preparing means and said selectively activating means with respect to the cylinders of one of said print heads, in combination with the actuation of a printing operation on the other print head, and (2) actuating said print head preparing means and said selectively acti-

vating means with respect to the cylinders of the said other print head, in combination with the actuation of a printing operation on the said one of said print heads.

4,327,642

INSERTS FOR CUTTING CHARGES

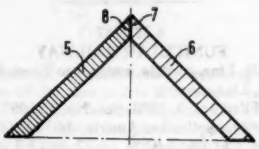
Wilhelm Grosse-Benne, and Paul Beermann, both of Menden, Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 116,003

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904155

Int. Cl.³ F42B *1/02*

U.S. Cl. 102—307 1 Claim



1. An apparatus for the cutting or shearing of man-made structural members, the improvement comprising an insert having at least two parts, said parts forming a gablesided expansion joint, said joint being fully closed in the cut direction.

4,327,643

ANTI-AIRCRAFT PROJECTILE WITH BASE, HIGH-EXPLOSIVE BODY, AND OGIVE

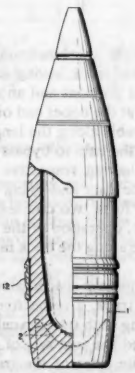
Fernando Lasheras Barrios, San Antonio Maria Claret, 43-45 Zaragoza, Spain

Filed Dec. 17, 1979, Ser. No. 104,460

Claims priority, application Spain, Dec. 27, 1978, 476,388

Int. Cl.³ F42B *13/48*

U.S. Cl. 102—493 5 Claims



1. An anti-aircraft projectile for intercepting flying objects such as airplanes and missiles, said projectile comprising:

a forward ogive, a rearward base, and a fragmentation assembly extending between said ogive and said base;

said base having therein a rearward facing recess forming a finless rearwardly extending skirt, said skirt having therethrough by-pass holes for balancing the pressure interiorly and exteriorly of said skirt, and for preventing the formation behind said base of reduced pressure and turbulence during the flight of the projectile; and

said fragmentation assembly comprising a high-explosive body containing therein an explosive charge, a casing coaxially surrounding said body and defining therewith an annular chamber, said body and said casing each having forward ends coupled to said ogive and rear ends coupled to said base, and steel balls or spheres freely packing and filling said chamber.

4,327,644

PROJECTILE DEPLOYED CABLE WEAPONS SYSTEM

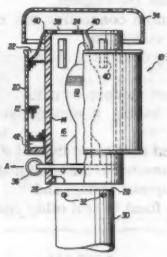
Charles M. Stancil, Springfield, Va., assignor to Stahan Corporation, Arlington, Va.

Continuation-in-part of Ser. No. 34,989, May 10, 1979. This application Feb. 25, 1980, Ser. No. 123,955

The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.

Int. Cl.³ F42B *13/56*

U.S. Cl. 102—504 12 Claims



1. An assemblage for deploying an amount of cable to defeat a helicopter rotor system, the assemblage comprising:

(a) a projectile for firing toward a helicopter, the projectile having a cavity therein;

(b) cable means situated within the cavity;

(c) a submunition situated within the cavity;

(d) means for projecting the submunition from the cavity a predetermined time after firing the projectile, and

(e) inelastically deformable snaring means for connecting the submunition to the cable means to carry the cable means from the cavity whereby the cable means overlies the helicopter for entanglement with a rotor thereof.

4,327,645

TIE TAMPER

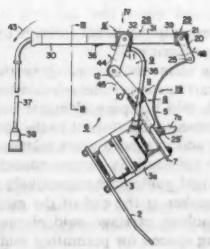
Kazuhide Yamazaki; Masaomi Morisawa, both of Tokyo, and Maki Nakajima, Ayase, all of Japan, assignors to Nippon Kokuyu Tetsudo and Kabushiki Kaisha Shibaura Seisakusho, both of Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 171,815

Claims priority, application Japan, Aug. 27, 1979, 54/108892

Int. Cl.³ E01B *27/00*

U.S. Cl. 104—13 3 Claims



1. A tie tamper comprising:

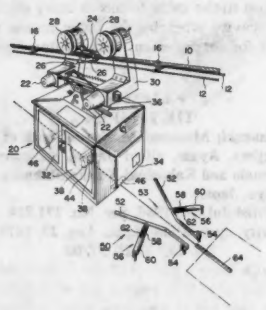
a motor adapted to generate vibration as output;
a beater designed to be thrust at a distal end thereof into ballast gravel and rigidly fixed at its proximal end to the motor to be vibrated thereby;
a handle to be grasped by an operator of the tie tamper;
a link mechanism connecting an intermediate part of the handle to the motor and comprising
a first Neidhart damper secured to the motor and having a non-cylindrical shaft disposed therein,
a second Neidhart damper secured to said intermediate part of the handle and having a non-cylindrical shaft disposed therein,
a first link fixed at one end thereof to the shaft of the first Neidhart damper, and
a second link fixed at one end thereof to the shaft of the second Neidhart damper and pin-connected at the other end thereof to the other end of the first link,
the first and second links always forming therebetween an angle less than 180 degrees;
a support mechanism connecting one end of the handle to the motor and comprising
a support spring connected at one end thereof to a part of the motor,
a third Neidhart damper secured to said one end of the handle and having a non-cylindrical shaft disposed therein, and
a third link fixed at one end thereof to the non-cylindrical shaft and connected at the other end thereof to the other end of the support spring; and
a balance weight fixed to said other end of the second link.

4,327,646

STABILIZING DEVICE FOR A CARRIAGE TRAVELLING ALONG AN AERIAL TRANSPORTING WAY

Sinji Nakata; Yutaka Nishimura, both of Yokohama, and Susumu Ueki, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Tokyo, Japan

Filed Jan. 8, 1980, Ser. No. 110,480
Claims priority, application Japan, Feb. 5, 1979, 54-12484
Int. Cl.³ B61B *11/00*
U.S. Cl. 104—89 **19 Claims**



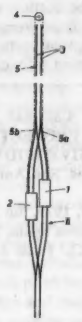
3. A stabilizing device for an aerial carriage travelling along an aerial cableway comprising:
a pair of bumping elements protruding vertically from the bottom of the carriage in parallel relationship with respect to one another, said bumping elements being located in transverse alignment with respect to the longitudinal axis of the carriage and in spaced apart relationship to define therebetween a substantially narrow space;
a pair of angled rigid guide bars respectively pivoted about a stationary member at the end of the guide bar remote from an approaching carriage, said pivoted ends of the guide bars being spaced for permitting said bumping elements to pass therethrough and adapted for restricting the lateral motion of the bumping elements, said guide bars being movable about said stationary member between an initial position in which said guide bars define an approximately horizontal V-shaped passageway for permitting said bumping elements to pass therethrough, and a moved position in which one of said guide bars is moved from said initial position away from the other guide bar when the bumping element adjacent said one guide bar collides therewith;
means for biasing said guide bars to said initial position against the force applied to one of said guide bars when the adjacent bumping element collides therewith, said biasing means acting to restore said one guide bar to its initial position against the colliding force; and
means, incorporated in said biasing means, for absorbing a force which causes rolling of the carriage.

4,327,647

FUNICULAR RAILWAY

Klaus Eisenkolb, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jul. 3, 1980, Ser. No. 165,957
Claims priority, application Austria, Jul. 12, 1979, 4848/79
Int. Cl.³ B61B *9/00, 13/12;* B61J *3/04*
U.S. Cl. 104—174 **1 Claim**



1. In a cable railroad: the combination of
(a) an inclined length of track having an intermediate turnout forming parallel portions and an upper end,
(b) a reversing pulley at the upper end of the length of track,
(c) a pair of cars movable along the length of track and the turnout permitting the cars to bypass each other,
(d) a traction cable having respective ends connected to exterior sides of the cars and being trained around the reversing pulley to form two courses extending exteriorally along the track, operation of the traction cable causing the cars to move along the track in opposite directions, and
(e) two sets of guide pulleys spaced along the entire length exteriorally of the track, a respective one of the sets of guide pulleys guiding each traction cable course, the track having two rails and the two sets of guide pulleys being disposed on opposite sides of the track and therebelow outside the track rails whereby the cable courses extend outside the track throughout its length.

4,327,648

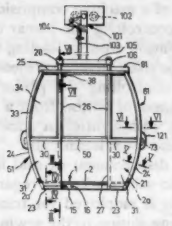
FUNICULAR RAILWAY CAR CABIN

Frech Anton, Wengistrasse 1, 4600 Olten, Switzerland

Filed May 14, 1979, Ser. No. 38,881
Int. Cl.³ B61B *9/00;* B61D *13/00, 17/06, 17/08*
U.S. Cl. 105—150 **10 Claims**

1. A cabin for a funicular railway, said cabin comprising a floor, two lateral walls facing each other, at least one of which has a door opening, two end-walls facing each other, and a

roof, characterized in that the said floor, walls and roof are connected detachably to each other, at least a part of the roof and walls are secured together by fastening means, in that at least those edges of the lateral walls and of the end walls, which are adjacent to one another, are formed at least in part by bars which extend along each other in pairs, bear upon each



other, and are fastened together by said fastening means passing through one of the bars and in that one of each of these pairs of adjacent bars thus fastened together has a longitudinal rib, while another bar has a longitudinal groove with which said rib engages, and that sides of longitudinal grooves taper towards their bottoms so that sides of said longitudinal ribs bear upon sides of said longitudinal grooves.

4,327,649

MAXIMUM TRACTION LOCOMOTIVE

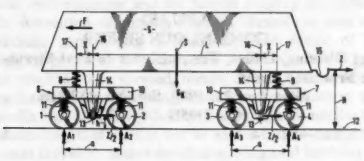
Ernst F. Kreissig, Seuzach, Switzerland, assignor to Schweizerische Lokomotiv-und Maschinenfabrik, Winterthur, Switzerland

Filed May 11, 1979, Ser. No. 38,214

Claims priority, application Switzerland, Mar. 6, 1979, 2166/79

Int. Cl.³ B61F *3/08, 5/18, 5/22*

U.S. Cl. 105—199 R **6 Claims**



1. A railroad propulsion vehicle comprising

a vehicle body;

a pair of trucks supporting said body thereon, each truck having a pair of wheel axles thereon;

means for transmitting traction forces via said trucks to said body at at least approximately the height of said axles, said means including a king pin supported in each respective truck at the height of said axles and fastened to said body in a transverse center plane of a respective truck; and

a pair of springs, each said spring being disposed between a respective truck and said body for supporting said body on said respective truck, each said spring being disposed between said transverse center plane of a respective truck and an adjacent end of said vehicle body on a centerline spaced a given horizontal distance from said center plane in the region of a transverse plane of a respective truck.

3. A rail road propulsion vehicle comprising

a vehicle body;

a pair of two-axle trucks supporting said body thereon, each said truck having a frame, a pair of axles and primary springs suporting said frame on said axles;

means connecting each respective truck to said body for transmitting traction forces from said trucks to said body at the height of said axles, said means including a king pin supported in said frame of a respective truck at the height of said axles and fastened to said body in a transverse center plane of a respective truck; and

a pair of secondary springs, each said secondary spring being disposed between a respective truck and said body for supporting said body on said respective truck, each said secondary spring being disposed between said transverse center plane of a respective truck and an adjacent end of said vehicle body to effect a loading of the two respective outer axles by a larger share of the weight force of said body than the two inner axles.

4,327,650

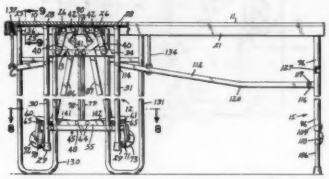
SUPPORT STRUCTURE FOR MOBILE FOLDING STAGE

Richard C. Bue, Chaska, Minn., assignor to Sico Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 8,613, Feb. 1, 1979, abandoned. This application Jun. 13, 1980, Ser. No. 159,234

Int. Cl.³ A47B *3/00*

U.S. Cl. 108—113 **4 Claims**



1. A mobile folding stage comprising:

a pair of stage surface members;

a plurality of main support legs and means interconnecting said legs to form a base frame for supporting the stage;

means for hingably mounting said pair of stage surface members to said base frame for pivotable movement of said members between an operable position in which the stage surface members are horizontally positioned with substantially abutting inner edges over the base frame to define a stage surface, and a storage position in which said members are generally vertically positioned above the base frame with surfaces adjacent each other;

outer leg means connected to said stage surface members for supporting the outer ends thereof in said operable position;

said base frame including a caster frame interconnecting the lower portions of said main support legs;

a plurality of caster beams pivotally connected to said caster frame;

a plurality of caster wheels mounted to said caster beams spaced from the pivotal connections thereof, for movement into and away from ground or floor engagement upon pivotal movement of the caster beams;

actuation links connected to said caster beams and to said stage surface members for pivoting said caster beams to retract said casters when the stage is in its operable position so that the stage is supported by said main support legs, and for pivoting said caster beams to extend said casters into ground or floor engagement when said stage surface members are folded to said storage position so that the stage is supported by the caster wheels to permit movement of the stage;

auxiliary support legs longer than said main support legs pivotally connected to the undersides of said stage surface members near the inner ends thereof for lateral movement between folded storage and unfolded use positions for elevational adjustment of stage height;

said caster beams positioned for lateral abutment with said auxiliary support legs to hold them in their unfolded use position; and

abutment members attached to said base frame adjacent said

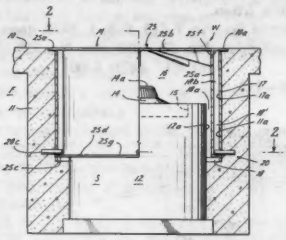
caster beams for longitudinal abutment with said auxiliary support legs in their unfolded use position so that the base frame and inner edges of the stage surface members are held in alignment against rocking motions by abutment with the auxiliary support legs on opposite sides of the base frame.

4,327,651

METHOD AND APPARATUS FOR PROTECTING A FLOOR SAFE FROM WATER DAMAGE

James T. Novakosky, 103 Tuscany, Sugar Land, Tex. 77478

Filed Sep. 29, 1980, Ser. No. 192,416
Int. Cl.³ E05G *1/026*
U.S. Cl. 109—68 **11 Claims**



1. Apparatus for preventing water from damaging a floor safe or other similarly mounted device, comprising:

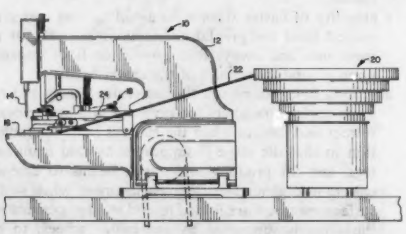
protective means adapted for positioning over the openable top and a part of the casing of a floor safe for trapping air between said protective means and such floor safe to prevent the intrusion of water into the region of the openable top of the floor safe by utilizing the pressure of the trapped air to resist the pressure of the intruding water thereby preventing possible leakage into the interior of the safe.

4,327,652

BUTTON CLAMP ASSEMBLY

Roy W. Fletcher, Riverdale, and Anthony D. Forte, Chicago, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Jun. 15, 1981, Ser. No. 273,528
Int. Cl.³ D05B *3/14, 97/00*
U.S. Cl. 112—110 **10 Claims**



1. Interchangeable button clamp assemblies for a sewing machine, each button clamp assembly comprising:

interchangeable button turret means capable of transferring buttons between a loading station and a sewing station and having a holder adapted for a particular range of button ligne and thickness, said holder being movable into and out of engagement with a workpiece being sewn;

universal means for orientating a button arranged in said holder before sewing;

universal means for indexing the holder through a series of predetermined steps; and

a universal button clamp for interchangeably carrying any of said button turret means in a manner permitting the holder to engage the workpiece with consistency regardless of button size.

2. A method for conveying buttons of varying thicknesses to the sewing station of a machine comprising the steps of:

conveying and controlling the planar displacement of one thickness of button from a loading station to a sewing station with one size conveyance means carried on a lever;

conveying and controlling the planar displacement of a different thickness of button from a loading station to a sewing station with a different sized conveyance means carried on a said lever means; and

maintaining the displacement of said lever generally constant relative to said workpiece regardless of which conveyance means is employed for transmitting the button from the loading station to the sewing station.

4. In combination with a sewing machine having a work support and a reciprocatory needle for securing various sized plate-like articles to a workpiece, an apparatus for delivering such various sized plate-like articles to and removing them from the path of the needle plane defined by the reciprocatory path of the needle, said apparatus comprising:

turret means adapted to receive such articles in succession and carry same to the path of the needle plane, said turret means being dimensioned as a function of the article's size so as to maintain said articles in a planar orientation extending parallel with the work support;

driver means for indexing said turret through a series of predetermined steps;

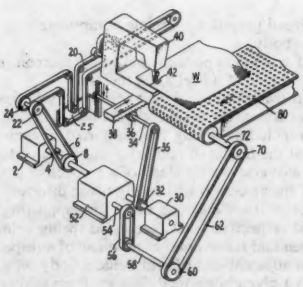
means for mounting said turret means on said machine for pivotal movement between a first position whereat the turret means engages the workpiece and a second position, said mounting means permitting the orientation of said turret means to remain generally constant relative to said work support regardless of the turret means dimensions.

4,327,653

CONTINUOUS SEWER

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed Jan. 21, 1980, Ser. No. 113,813
Int. Cl.³ D05B *3/00, 27/00*
U.S. Cl. 112—121.14 **4 Claims**



1. A continuous sewer comprising:

a. differential drive means having first and second torque inputs and a torque output, the torque output being the sums of the first and second torque inputs;

b. continuously running means supplying the first torque input;

c. cyclically reversing means supplying the second torque input;

d. continuously driven sewing machine;

e. a conveyor for carrying a workpiece past the sewing machine and which is cyclically driven by the output torque of the differential drive means; and

f. sewing machine transport means driven by the cyclically reversing means for reciprocating the sewing machine alongside the conveyor.

4,327,654

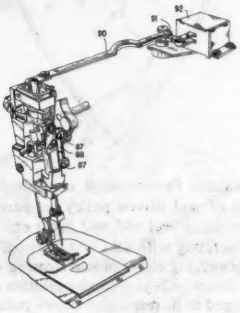
BASTING STITCH OVERTHROW SYSTEM

Charles R. Odermann, Montville; Robert B. Brauch, Wayne, and Philip F. Minalga, Piscataway, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Mar. 2, 1981, Ser. No. 239,834

Int. Cl.³ D05B *3/02, 55/16*

U.S. Cl. 112—158 E **2 Claims**



1. A basting stitch mechanism for an electronically controlled sewing machine, said basting stitch mechanism comprising:

a frame, an actuating mechanism carried by said frame, a needle carrying needle bar carried by said frame for endwise reciprocation and for lateral jogging movement for the formation of zigzag stitches, means on said sewing machine establishing a predetermined range of lateral jogging positions of said needle bar in which it is possible for stitches to be formed, means driven by said actuating mechanism for imparting endwise reciprocation to said needle bar, a latching means carried by said needle bar for connecting said needle bar to said endwise reciprocating means therefor, means for disengaging said latching means from said endwise reciprocating means upon a jogging movement beyond said predetermined range of lateral jogging positions, means including a linear actuator and an electronic system therefor for imparting lateral jogging movement to said needle carrying bar within said predetermined range of lateral jogging positions, and means for selectively urging said linear actuator beyond said predetermined range.

4,327,655

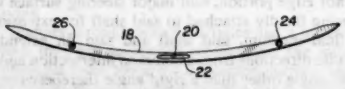
SEWING NEEDLE

Clarence A. Addy, and William C. Krizen, both of Sarasota, Fla.

Continuation of Ser. No. 95,875, Nov. 19, 1979, Pat. No. 4,248,165. This application Jan. 30, 1981, Ser. No. 229,798

Int. Cl.³ D05B *85/06*

U.S. Cl. 112—222 **5 Claims**



1. A sewing needle for sewing cover halves together around a ball core, said sewing needle comprises:

an elongate arcuate body portion having first and second tapered ends and having three transverse openings extending through said body portion and being positioned along the length thereof, one of said three transverse openings being positioned approximately at a midpoint of the length of said arcuate body and the other two transverse openings being generally equally spaced on either side of said one opening toward the respective ends of said arcuate body.

4,327,656

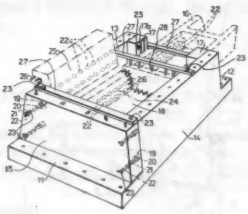
FLOATING DOCKS

Einar Knutsen, Astrupsvei 36, 5032 Minde, Norway

Filed Dec. 14, 1979, Ser. No. 103,467

Int. Cl.³ B63C *1/02*

U.S. Cl. 114—47 **9 Claims**



1. A floating dock assembly for making an elongate, cast concrete construction by producing in sequence sections of the construction in a drainable work chamber defined by said dock assembly and comprising a dock having upwardly and inwardly facing panels and end gates, fastening means for releasably securing parts of said docks assembly to each other and for releasably securing a section of said construction to part of said dock assembly, said fastening means including a plurality of fastening members mounted in fixed positions in said panels and anchoring members releasably engageable with said fastening members, said end gates being secured to said panels by said fastening means and cooperating with said panels to define said work chamber, boarding members received within said work chamber and secured to said panels by said fastening means, a first section of said construction cast in a first position within said work chamber, sleeve means mounted in fixed position within said first section, said first section being movable to a second position relative to said dock assembly when one of said end gates is removed from an associated end of said dock assembly, said first section in its second position projecting from said work chamber and beyond said dock assembly and at least partially defining a closure for said associated end of said dock assembly, said sleeve means being aligned with associated fastening members when said first section is in said second position to receive therethrough anchoring members engageable with said associated fastening members for securing said first section to said dock assembly in said second position whereby a second section of said construction may be cast within said work chamber as a continuation of said first section.

4,327,657

SAILING CRAFT SELF-STEERING SYSTEM

Stellan P. Knoos, 5933 Avenida Chamnez, La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 959,326, Nov. 9, 1978, abandoned. This application Jan. 28, 1980, Ser. No. 115,735

Int. Cl.³ B63H *25/00*

U.S. Cl. 114—144 C **20 Claims**

1. A system for self-steering a sailing craft to maintain a predetermined heading comprising:

a center body,

means for supporting said center body on the boat for piv-

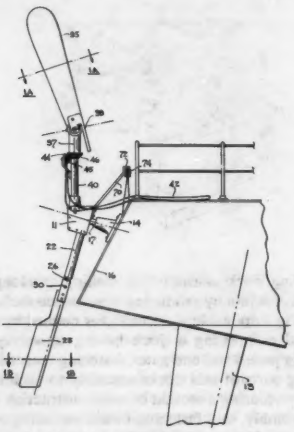
otal motion about an axis running in a generally longitudinal direction relative to the hull of said craft,

an oar member,

means for suspending said oar member from said center body in the water behind said craft, said oar member being suspended for rotational motion about an axis substantially normal to the pivotal axis of said center body,

wind vane means for generating a mechanical displacement representing changes in the heading of the craft from a predetermined heading,

rigid tube means fixedly attached to said center body at one end thereof and extending substantially upwardly therefrom for pivotally supporting said wind vane means on said center body for motion therewith about the pivotal axis of the center body, said wind vane means being supported on the other end of said tube means for pivotal motion about an axis running in a generally longitudinal direction relative to the hull of said craft,



means for coupling the mechanical displacement output of said wind vane means to said oar member to rotatably drive said oar member in accordance with said mechanical displacement, the oar member being pendulously driven by the water stream when such rotation thereof occurs and pivotally driving the center body about its pivotal axis, said center body carrying said wind vane means along with it about said pivotal axis, and

means for coupling said center body to the rudder of the craft whereby said rudder is driven in response to pivotal motion of the center body so as to maintain the heading of the boat on said predetermined heading.

4,327,658

MARINE STEERING SYSTEM

Walter Kulischenko, East Brunswick, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 25, 1980, Ser. No. 172,102

Int. Cl.³ B63H *21/26*

U.S. Cl. 114—146 **3 Claims**

1. Marine vessel steering apparatus for steering said vessel from a plurality of locations comprising

a first steering wheel mounted at a main deck dashboard,

a second steering wheel mounted at another location on said vessel,

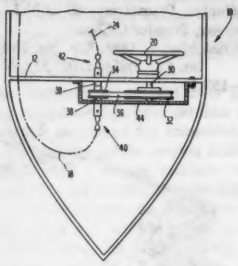
a steering member for steering said vessel,

a first rotatable flexible shaft articulating between said steering member and said first steering wheel, each of said steering wheels capable of controlling said steering member through said first flexible shaft, each of said steering wheels cooperating with a pulley-belt system including

a driver pulley rotating in response to rotation of respective steering wheel,

a driven pulley,

belt means operably engaged about said driver and driven pulleys whereby rotation of said first steering wheel rotates said first flexible shaft to control said steering member, each of said driven pulleys having a shaft secured thereto, said driven pulley shafts having an input end and an output end,



a second rotatable flexible shaft connected between said output end of said driven pulley cooperating with said second steering wheel and said input end of said driven pulley cooperating with said first steering wheel,

means for disengaging either of said steering wheels from its respective driver pulleys whereby rotation of said steering wheel engaged to its respective driver pulley rotates each of said flexible shafts to control said steering member.

4,327,659

MINIMUM DRAG FLUID REACTION ELEMENT AND FLUID CONTROL METHODS

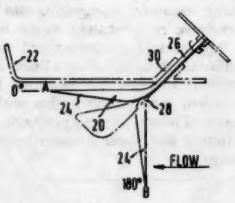
Henry Masheder, London, England, assignor to Masheder Design Studies Ltd., London, England

Filed Nov. 22, 1978, Ser. No. 962,810

Claims priority, application United Kingdom, Nov. 29, 1977, 49576/77

Int. Cl.³ B63H *25/06*

U.S. Cl. 114—162 **15 Claims**



1. A minimum drag fluid element for a vessel carried upon or within a fluid medium, comprising:

a rotatable shaft having an axis of rotation defining a vertical plane together with a central longitudinal axis of the vessel;

a rigid fluid reaction fin having a major steering surface and a minor edge portion, said major steering surface of said fin being fixedly attached to said shaft for extension into the fluid medium, said shaft and said fin extending in opposite directions from a common intersection and forming an angle other than a right angle therebetween; and

means connected to the vessel for supporting said shaft so that, in a neutral position, said major steering surface of said fin is positioned adjacent and parallel the underside of the vessel in the fluid medium substantially parallel to a

horizontal plane in which the central longitudinal axis of the vessel is lying, whereby movement of said fin in either direction from said neutral position causes steering of the vessel in either direction;

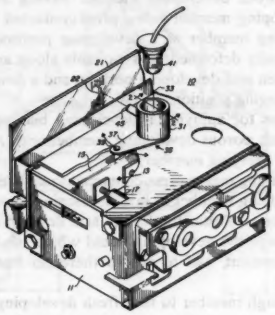
the plane defined by the axis of rotation of said shaft and a central longitudinal axis of said fin being generally normal to said major steering surface of said fin whereby rotation of said shaft moves said fin through a path describing a right conical section.

4,327,660

BAND FREQUENCY INDICATING SYSTEM

Donald E. Irving, Elmwood Park, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jan. 2, 1979, Ser. No. 849
Int. Cl.³ H03J *1/00*
U.S. Cl. 116—257 **3 Claims**



1. A system for indicating the band frequency of a receiver comprising:

a frame,

a dial scale made of translucent material having marking indicia indicative of band frequency supported by said frame,

carriage means operative to move in a linear path for tuning a radio receiver to a desired band frequency; and

rotatable illumination means pivotally supported on said frame and drivingly engaged by said carriage means for pivoting on an axis to project a beam of light along a predetermined path towards said dial scale to indicate a band frequency corresponding to the position of said carriage means,

wherein said illumination means includes a cylindrical member connected to a rotatable link member which is pivotally supported on said frame at one end and moves with said carriage means at the other end in the path of an arc.

4,327,661

CHAMBER BLOCK HAVING A SUPERNATANT COLLECTION RECEPTACLE THEREIN

John W. Boeckel, Hamden, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 5, 1980, Ser. No. 175,501
Int. Cl.³ B05C *13/02*; B04B *11/00*
U.S. Cl. 118—52 **10 Claims**

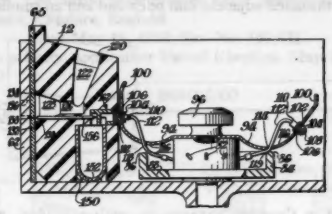
1. In a chamber block adapted for removable insertion into and out of a centrifuge rotor, the chamber block being of the type having

(a) a channel through which particles and a supernatant in which they are suspended move under the influence of centrifugal force toward a deposition surface, and

(b) a conduit through which supernatant is withdrawn by suction from the region of the deposition surface;

wherein the improvement comprises:

a closable opening formed within the chamber block which, when closed, defines a supernatant collection receptacle within the block; and,



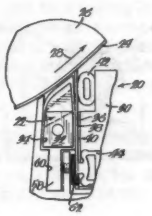
a baffle disposed within the block and adapted to deflect supernatant withdrawn through the conduit into the receptacle.

4,327,662

EDGE DAM ASSEMBLY FOR PAPER COATING APPARATUS

Wayne A. Damrau, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed Apr. 14, 1980, Ser. No. 139,819
Int. Cl.³ B05C *3/18*
U.S. Cl. 118—410 **17 Claims**



1. An improved edge dam assembly for use with an applicator for applying a coating liquid to a web of moving paper carried on a movable support, wherein the applicator is of a type having a body portion defining a chamber therein with a elongate opening thereto positionable generally below, adjacent and transversely of the web, the chamber receiving coating liquid and directing the same generally upwardly through the opening and onto the web, said edge dam assembly comprising seal means at each end of the opening mountable in the opening generally below the web for sealing along side surfaces thereof with the body portion on opposite sides of the opening and for extending at upper surfaces thereof toward and closely adjacent to but spaced from the web for sealing therewith, each said seal means having a plurality of spaced grooves formed therein along said side and upper surfaces thereof, the interiors of said grooves being substantially at atmospheric pressure and said grooves in said upper surface extending generally along the direction of movement of the web thereat, whereby coating liquid seeping past said seal means enters and gravitates through said grooves.

4,327,663

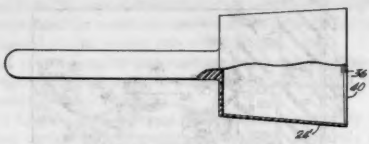
DOOR KNOB SHIELD

Michael J. Izzo, P.O. Box 1125, Homestead, Fla. 33030

Filed Aug. 18, 1980, Ser. No. 179,108
Int. Cl.³ B05C *21/00*
U.S. Cl. 118—505 **2 Claims**

1. A door knob shield comprising an elongate handle having a first end and a second end, a skirt having a closed end and an open end and means securing the closed end in coaxial relation

with the handle, said skirt being sized for nestingly recieving the door knob and said open end of said skirt being sized to abutt the surface of a door adjacent a door knob, said skirt is in internal threaded adjacent said open end and an annular ring is



provided in threaded engagement with said skirt, said ring being inserted within said skirt and adapted to accommodate the door knob, where different sized rings can be individually attached to the threaded end of the skirt to accommodate different sized door knob bases.

4,327,664

WET TYPE ELECTROSTATIC IMAGE DEVELOPING DEVICE

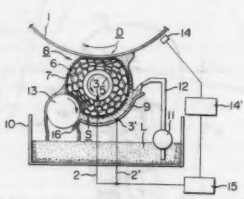
Yasuhiro Ohkawa, Chiba, and Takashi Saito, Ichikawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 70,984

Claims priority, application Japan, Aug. 31, 1978, 53-106869

Int. Cl.³ G03G *15/10*

U.S. Cl. 118—661 **37 Claims**



1. A device for developing an electrostatic latent image formed on an image carrying member moving along a predetermined path with a liquid developer, comprising:

(a) a porous developing member having resiliency, said developing member being press-contacted to said image carrying member at a developing position so as to be elastically deformed, and movable along an endless path between said developing position and a developing liquid exchanging position;

(b) means for applying a developing bias voltage to said resilient, porous developing member with respect to said image carrying member;

(c) rotatable refreshing means press-contacted to said resilient, porous developing member at said developing liquid exchanging position to elastically deform said developing member to discharge the developing liquid which has been used for development; and to absorb thereinto fresh developing liquid, said refreshing means being electrically conductive; and

(d) insulating means for maintaining said electrically conductive refreshing means in an electrically floated state to prevent formation of an electric field between said developing member and refreshing means.

10. A device for developing an electrostatic latent image formed on an image carrying member moving along a predetermined path with a liquid developer, comprising:

(a) a porous developing member having resiliency, said developing member being press-contacted to said image carrying member at a developing position so as to be elastically deformed, and movable along an endless path between said developing position and a developing liquid exchanging position;

(b) means for applying a developing bias voltage to said resilient, porous developing member with respect to said image carrying member;

(c) rotatable refreshing means press-contacted to said resilient, porous developing member at said developing liquid exchanging position to elastically deform said developing member to discharge the developing liquid which has been used for development, and to absorb thereinto fresh developing liquid, said refreshing means comprising an electrically conductive member coated with an insulative thin layer; and

(d) insulating means for maintaining said electrically conductive member in an electrically floated state to prevent formation of an electric field between said developing member and refreshing means.

33. A device for developing an electrostatic latent image formed on an image carrying member moving along a predetermined path with a liquid developer, comprising:

(a) a porous developing member having resiliency, said developing member being press-contacted to said image carrying member at a developing position so as to be elastically deformed, and movable along an endless path between said developing position and a developing liquid exchanging position;

(b) means for applying a developing bias voltage to said resilient, porous developing member with respect to said image carrying member;

(c) refreshing means press-contacted to said resilient, porous developing member at said developing liquid exchanging position to elastically deform said developing member to discharge the developing liquid which has been used for development, and to absorb thereinto fresh developing liquid;

(d) a trough member to feed fresh developing liquid to the outlet region at the press-contacted portion of the developing member and refreshing member with respect to the moving direction of said developing members, said trough member being positioned in facing relationship with said developing member with a small gap therebetween for maintaining the developing liquid, wherein said trough member is conductive; and

(e) means for electrically connecting said trough member and said developing member to thereby maintain them at the same voltage.

35. A device for developing an electrostatic latent image formed on an image carrying member moving along a predetermined path with a liquid developer, comprising:

(a) a porous developing member having resiliency, said developing member being press-contacted to said image carrying member at a developing position so as to be elastically deformed, and movable along an endless path between said developing position and a developing liquid exchanging position;

(b) means for applying a developing bias voltage to said resilient, porous developing member with respect to said image carrying member;

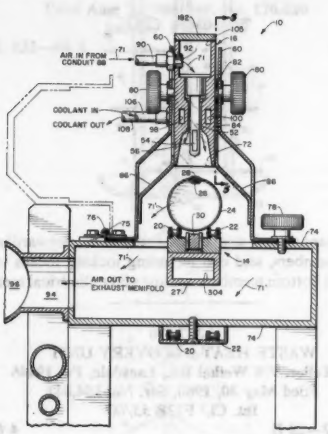
(c) refreshing means press-contacted to said resilient, porous developing member at said developing liquid exchanging position to elastically deform said developing member to discharge the developing liquid which has been used for development, and to absorb thereinto fresh developing liquid; and

(d) a trough member to feed fresh developing liquid to the outlet region at the press-contacted portion of the developing member and refreshing member with respect to the moving direction of said developing member, said trough member being positioned in facing relationship with said developing member with a small gap therebetween for maintaining the developing liquid, wherein the side of said trough member facing said developing member is made of a synthetic resin insulating material.

4,327,665
METHOD AND APPARATUS FOR COATING COMPOSITION ON CAN SEAMS

Clemens Arrasmith, 5919 Sarah Ct., Carmichael, Calif. 95608

Filed Jul. 26, 1979, Ser. No. 60,331
Int. Cl.[3] B05C *15/00*; F26B *3/30*
U.S. Cl. 118—666 35 Claims



1. In a can assembly line of the type having means for forming rectangularly shaped sheets of can material into cylindrical tubes, means for welding the ends of the sheets together to form seams, and coating means for applying a stripe of coating to the seams after welding, an apparatus for curing the coating on the can seams comprising:

(a) means for conveying the cans successively in a generally linear direction generally parallel to the axis of the cylindrical cans, said conveyor means having means for maintaining the position of the seams in like orientation as the cans are moved;

(b) a plurality of serially arranged mutually adjacent lamp modules, each of said modules further comprising:

(I) at least one infrared lamp for generating infrared radiation;

(II) a reflector surrounding said lamp for directing the radiation into a beam; and having a duct therein for the passage of collant; and

(III) a shroud covering said reflector and said lamp, said shroud being adapted for operative connection to the conveyor means and defining a generally enclosed tunnel with the conveyor means for the moving cans, wherein said shroud comprises an outer member, an inner moveable member covering said reflector and said lamp, and means for moving said inner member relative to said outer member, whereby the separation distance between the lamp and the moving cans may be varied,

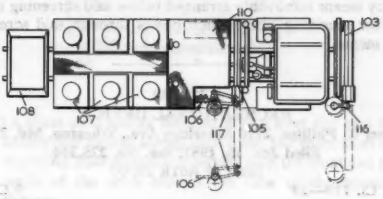
(IV) hinge means providing a hinged connection between said shroud and the conveyor means, whereby said shroud may be rotated about the hinge axis for access to said lamp and the conveyor means,

said infrared lamp module being adapted for connection to a coolant supply whereby heat generated by said lamp is dissipated by coolant passing through said duct.

4,327,666
VEHICLE WITH SPRAY MEANS

Francis H. Lee, Little Stanneylands Farm, Stanneylands Rd., Wilmslow, Cheshire, England

Filed May 16, 1980, Ser. No. 150,531
Claims priority, application United Kingdom, May 16, 1979, 17055/79
Int. Cl.[3] B05C *5/00*
U.S. Cl. 118—679 13 Claims

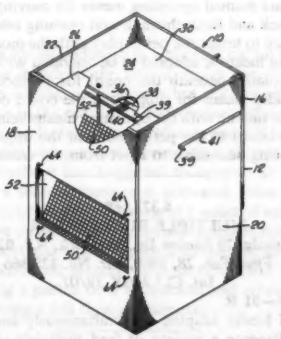


1. A motorized vehicle for effecting a spraying operation onto an elongate structure as the vehicle travels alongside said structure, the vehicle comprising an arm extendable transversely of the vehicle and provided with spray means for effecting said spraying operation associated with means for following the elongate structure, a tank for holding a medium to be sprayed by the spray means, and means for supplying said medium under pressure to the spray means, said spray means being mounted on the arm by a trailing linkage movable between control position limits relative to the end of the arm, and said linkage being adapted to control extension or retraction of the arm when said position limits are reached.

4,327,667
CAT TOILET ASSEMBLY

Richard C. Bilak, 1016 Delaware Ave., Glassport, Pa. 15045

Filed Nov. 12, 1980, Ser. No. 206,060
Int. Cl.[3] A01K *29/00*
U.S. Cl. 119—1 5 Claims



1. A cat toilet assembly comprising:

a hollow enclosure having an open top and upstanding sides, at least one of said sides having an intermediately located passageway therethrough;

selectively operable door means for completely closing the open top of said enclosure arranged below the top edge of said enclosure to define with the upper portion of the sides of the enclosure a receptacle for receiving cat litter;

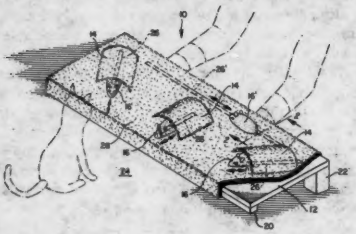
generally planar screening means in said enclosure arranged at a downwardly directed inclination below said door means and communicating with said passageway for receiving thereon a mass of litter and excrement and having openings therethrough to permit the litter alone to pass

downwardly, and constructed and arranged with said enclosure to permit excrement to move in a downwardly direction under its own weight and out of said passageway;

said screening means being operatively connected with said door means to pivot downwardly to a first angle of inclination when said door means are opened and to pivot upwardly to a second angle of inclination greater than the first angle of inclination when said door means are closed; and

tray means removably arranged below said screening means for receiving litter which passes through said screening means.

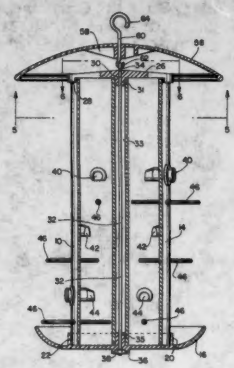
4,327,668
RECREATIONAL DEVICE
Robert G. Phillips, 2710 Blueridge Ave., Wheaton, Md. 20902
Filed Jan. 15, 1981, Ser. No. 225,354
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—29 **9 Claims**



1. A recreational device for providing co-participatory activity for a pet owner and a pet comprising a baseboard, an enclosure situated on an upper surface of the baseboard, a model simulating a living creature, means mounting said model on the upper surface of the baseboard for reciprocating movement into and out of said enclosure through an opening in the enclosure, and manual operating means for moving said model manually back and forth through said opening into and out of said enclosure to tempt the pet to play with the model, wherein the operating means is adapted to be operated with a pet owner's hand situated beneath the board for protection and the device includes means for supporting the board on a working surface on an incline with the operating means being accessible beneath the board to the pet owner and the upper surface of the board being accessible to a pet from the working surface.

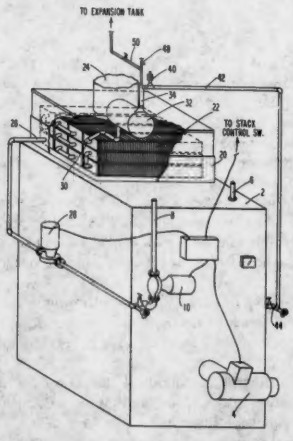
4,327,669
MULTIPLE BIRD FEEDER
Morton Blasbalg, 26 Sandro Dr., Warwick, R.I. 02886
Filed Feb. 28, 1980, Ser. No. 125,366
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—51 R **7 Claims**

1. A bird feeder adapted to simultaneously and separately store and dispense a variety of feed materials comprising a plurality of separate hollow cylindrical members grouped together in contiguous relation and forming a hollow vertically oriented channel centrally therebetween, said hollow members adapted to receive feed and in turn provided with means including openings in the body of said cylinders whereby said feed may be dispensed therefrom, a bottom member adapted to receive the bottom portions of said cylindrical members and in turn provided with an upstanding boss member aligned with said bottom member extending peripherally beyond the extent of said cylindrical members and defining a concave tray adapted to receive feed spilled from said cylindrical members and projecting into said channel, a top member adapted to receive the top portions of said cylindrical members and in turn provided with a downwardly extending boss member aligned with and projecting into said channel, said boss members each having a bore, and a rod adapted to pass



through channel and said bores and extend outwardly from said boss members, said end including locking means to urge said top and bottom members against said cylindrical members.

4,327,670
WASTE HEAT RECOVERY UNIT
Charles J. Teller, 976 Weikel Rd., Lansdale, Pa. 19446
Filed May 30, 1980, Ser. No. 154,841
Int. Cl.³ F22B *33/00*
U.S. Cl. 122—20 B **4 Claims**



1. In a water heating system which includes a boiler means for heating the water within said system, a first conduit means for removing heated water from said boiler, a second conduit means for returning said water to said boiler and an exhaust flue for discharging waste products of combustion from said system, an apparatus for recovering heat from said waste products of combustion, said apparatus comprising:

a coil of heat conductive material positioned within said exhaust flue, said coil having an inlet and an outlet;

first means for diverting water from said water in said second conduit means for returning water to said boiler to the input of said coil;

manifold means, having an input side and an output side;

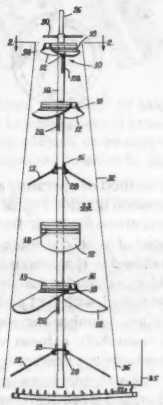
first means for directing said diverted water from the outlet of said coil to said manifold means input side;

second means for diverting said diverted water from said manifold means output side to said boiler; an expansion valve is mounted in line between said manifold means output side and said boiler; and said manifold means further comprises a split output whereby a bleeder valve is mounted on said output side.

4,327,671
REMOVABLE FLUE BAFFLES

Jon W. Zimmer, Sr., Elmhurst, Ill., assignor to Gas Research Institute, Chicago, Ill.

Filed Aug. 7, 1980, Ser. No. 176,020
Int. Cl.³ F22B *9/00*
U.S. Cl. 122—44 A **24 Claims**



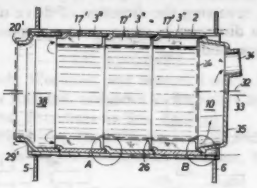
1. In a heating device having a storage tank, a burner beneath said storage tank and a flue passing through said storage tank for heat transfer to material in said storage tank and for escape of exhaust gases from said burner, said flue having a bottom end adjacent said burner and a top end in communication with the atmosphere, the improvement comprising: a removable flue baffle comprising diverting means in said flue for diverting the flow of gases and heat to contact the walls of said flue and means for collapsing said diverting means in said flue so that said baffle may be installed in or removed from said top end of said flue which may be smaller than said bottom end.

4,327,672
FUEL BURNING BOILER

Hans Viessmann, Im Hain, D-3559 Battenberg, Eder, Fed. Rep. of Germany

Filed Feb. 12, 1980, Ser. No. 120,899
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1979, 2906362; Jun. 13, 1979, 2923832; Dec. 5, 1979, 2948864; Dec. 5, 1979, 2948905
The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.
Int. Cl.³ F22B *7/00, 31/00*
U.S. Cl. 122—136 R **22 Claims**

1. A fuel burning boiler comprising
(a) a water holding shell of sheet steel, the shell having
(1) a front wall and
(2) a rear wall, the front and rear walls defining axially aligned openings, and
(b) an insert body passing through the openings and affixed thereto, the water being held between the shell and the insert body, and the insert body including
(1) a cast iron casing providing a combustion chamber in the interior thereof having a series of radially inwardly extending ribs defining therebetween ducts for combustion gases of the fuel burnt in the combustion chamber, and a smoke box at the rear wall and in communication with the ducts for receiving the combustion gases therefrom, and

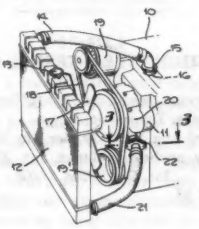


(2) a sheet steel casing forming a skin over the cast iron casing and tightly fitting thereover, the sheet steel casing being fluid tightly connected with the front and rear walls of the shell around the rims of the openings therein.

4,327,673
ENGINE COOLING SYSTEM

Elmer F. Schroeder, Box 6, Crescent Valley, Nev. 89821

Filed Apr. 13, 1981, Ser. No. 253,791
Int. Cl.³ F01P *7/16*
U.S. Cl. 123—41.08 **7 Claims**



1. A system for embodiment in a cooling circuit for a combustion engine in which the circuit makes use of a cooling jacket for the engine, a radiator, a hot coolant outflow line from the jacket to the radiator, a cool coolant inflow line from the radiator to the jacket and a circulating pump in said circuit, said system comprising a first thermostat activated valve device in said outflow line triggered to operate at a selected temperature, a second thermostat activated valve device in said inflow line triggered to operate at a selected temperature, said first valve device when in normal position having a full shut-off adjacent and when triggered to operate having a full flow adjustment, said second valve device when in normal position having a partial flow adjustment and when triggered to operate having a full flow adjustment.

4,327,674
APPARATUS FOR COOLING A VEHICLE ENGINE ROOM

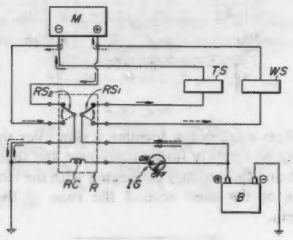
Hirofumi Takei, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 29, 1980, Ser. No. 125,858
Claims priority, application Japan, Mar. 6, 1979, 54-28195[U]
Int. Cl.³ F01P *7/08*
U.S. Cl. 123—41.12 **4 Claims**

1. An apparatus for cooling an internal combustion engine contained in a vehicle engine room, comprising:
a motor;
a fan driven by said motor;

first circuit means for energizing said motor to drive said fan in a first direction to introduce fresh air into the engine room to cool the engine in response to a running condition of the engine when the engine room temperature is above a predetermined first temperature;

means for reversing the direction of drive of the fan from said first direction in response to a stopped condition of the engine; and



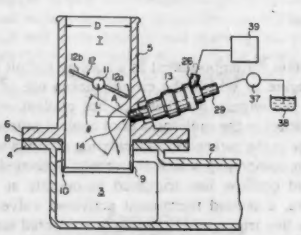
second circuit means connected to said reversing means for energizing said motor in response to a stopped condition of the engine when the engine room temperature is above a predetermined second temperature, whereby the fan is driven in said reverse direction to draw hot air from the engine room until the engine room temperature is lower than said predetermined second temperature.

4,327,675

FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

Keiso Takeda, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 23, 1979, Ser. No. 68,748
Claims priority, application Japan, Jan. 23, 1979, 54-5534
Int. Cl.³ F02M *51/08*
U.S. Cl. 123—52 M **11 Claims**



1. A fuel injection type internal combustion engine comprising:

an engine body;

an intake manifold fixed onto said engine body and having a collecting portion;

an intake duct extending substantially vertically upwardly from said collecting portion and defining an intake passage therein, said intake passage having a substantially uniform cross section;

a throttle valve arranged in said intake passage and having a throttle shaft; and

a swirl type fuel injector having a fuel nozzle which is directed slightly downwards and is arranged in said constant cross section intake passage at a position spaced below said throttle shaft by a distance less than one half of the diameter of said intake passage on the side of the throttle valve which moves downwardly relative to the throttle shaft when the valve is opened, such that said downward opening side of the throttle valve enters into the region of the fuel spray when the throttle valve is opened to a great extent.

4,327,676

METHOD AND APPARATUS FOR A LOW EMISSION DIESEL ENGINE

Ray G. McIntire, 896 Black Foot Trail, Jamestown, Ohio 45335, and Douglas Colvette, 912-4 LaCosta, Sarasota, Fla. 33577

Filed Mar. 3, 1980, Ser. No. 126,769
Int. Cl.³ F01L *1/08*
U.S. Cl. 123—90.6 **5 Claims**

1. An improved method of operating a high-speed four-cycle automotive compression ignition engine of the type wherein an intake manifold receives fresh air from ambient air, intake valve means associated with the intake manifold is intermittently opened and closed so that amounts of fresh air flow from the intake manifold to a cylinder defining a combustion chamber, the fresh air is mixed with fuel and the mixture is burned within the combustion chamber thereby expanding to urge a piston to rotate a crankshaft, exhaust valve means communicating with the combustion chamber is intermittently opened and closed such that exhaust gases are exhausted from the combustion chamber, and a camshaft, communicating with the intake and exhaust valve means by linkage means, is rotated to actuate the intake and exhaust valve means, the improvement comprising the steps of:

forcing fresh air into the intake manifold until fresh air within the combustion chamber reaches a pressure above ambient pressure; and

timing the opening of the inlet valve means and the closing of the exhaust valve means such that the exhaust valve means is fully closed for between 1° and 6° of crankshaft rotation before the inlet valve means is opened throughout the entire range of engine speeds to prevent fresh air from flowing directly from the inlet valve means through the exhaust valve means.

4,327,677

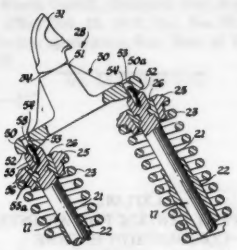
SEMI-FLOATING VALVE BRIDGE

Arnold Vander Bok, Northville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 20, 1979, Ser. No. 50,230
Int. Cl.³ F01L *1/18*
U.S. Cl. 123—90.4 **2 Claims**

1. In a valve gear mechanism for an internal combustion engine of the type having a cylinder head; a pair of spaced apart valves, each valve having a valve stem slidably received through a guide sleeve fitted into the cylinder head, the free end of each valve stem extending outward from the cylinder head; a valve actuating means mounted in spaced relation from the stems of the valves; and, a multi-valve actuating valve bridge operatively positioned between the valve actuating means and the stems of the valves; the improvement wherein said valve bridge is semi-floating and includes a web member having end portions providing crowned valve stem engaging surfaces on one side thereof for abutting against the respective free ends of the valve stems and an intermediate tappet head extending from the opposite side of said web member for engagement with the valve actuating means, and cooperating alignment means associated with each said end portion and the

valve stem of an associated valve for loosely holding said valve bridge in aligned position relative to the valves, said cooperating alignment means including a guide bore in one of the associated said end portion and associated valve stem and a fixed



guide pin extending from the other of said end portion and valve stem so as to be loosely received in said guide bore, said valve bridge thus being adapted to be supported by the valve stems and to be self-adjusting relative to the respective valve stems heights.

4,327,678

SUPPORT DEVICE FOR THE SET OF VALVE ROCKERS OF AN INTERNAL COMBUSTION ENGINE, PARTICULARLY A LARGE-SIZE ENGINE

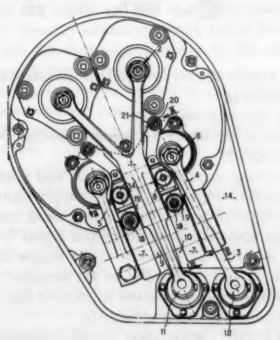
Jean-Pierre Pollet, Arnouville les Gonesse, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint-Denis, France

Filed Jan. 4, 1980, Ser. No. 109,665

Claims priority, application France, Jan. 31, 1979, 79 02507

Int. Cl.³ F01L *1/26*

U.S. Cl. 123—90.4 9 Claims



1. A support device for a set of valve rockers of an internal combustion engine having a cylinder head with an upper surface, at least one inlet valve, and at least one exhaust valve, the support device including a support block; tie rods anchored in the cylinder head and securing the support block to the cylinder head; a central rocker device for operating at least one of said inlet and exhaust valves; a shaft for rotatably mounting said central rocker device on said support block; lateral rocker devices including two arms for simultaneously operating two other of said inlet and exhaust valves, one of said arms being located on one side and the other of said arms being located on the other side of said central rocker device; and a shaft for rotatably mounting said lateral rocker devices on said support block, wherein the improvement comprises:

a recess provided in said support block for mounting said shaft of the central rocker device, said recess being configured for allowing upward removal of said shaft with said central rocker device from said support block without removing said tie rods from said engine cylinder head and said support block, and

selectively removable stud bolts securing to the support block said shaft of the central rocker device in said recess.

4,327,679

I.C. ENGINES

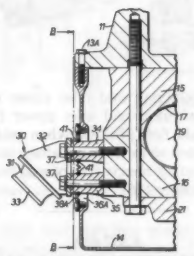
Alan R. Crouch, Worthing, and Samuel Lesley, Shoreham-by-Sea, both of England, assignors to Ricardo Consulting Engineers Limited, Shoreham-by-Sea, England

Filed May 30, 1979, Ser. No. 43,893

Claims priority, application United Kingdom, May 31, 1978, 25114/78

Int. Cl.³ F02B *77/00*

U.S. Cl. 123—195 R 13 Claims



1. A reciprocating-piston internal combustion engine having a cylinder block, a crankcase mounted beneath the cylinder block, the crankcase having a depending peripheral wall, and a rotary crankshaft journalled in a main bearing structure secured to the underside of the cylinder block within the crankcase, a portion of said bearing structure being spaced from said crankcase wall to form a gap between them, the engine being supported by at least one engine mounting on a supporting structure, said mounting being attached to the engine by at least one rigid support, said rigid support extending through an oversize flexibly-sealed aperture in the wall of the crankcase and across said gap and being rigidly secured to said portion of the main bearing structure, wherein said crankcase wall being isolated from dynamic reaction loads generated at said mounting by the engine in operation due to the crankcase wall being free from direct contact with said rigid support and said engine mounting.

4,327,680

AIR INTAKE ASSEMBLY

Fred R. Dauwalder, Scottsdale, Ariz., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00557, § 371 Date May 12, 1980, § 102(e) Date May 12, 1980

PCT Filed May 12, 1980, Ser. No. 245,242

Int. Cl.³ B01D *50/00*

U.S. Cl. 123—195 C 6 Claims

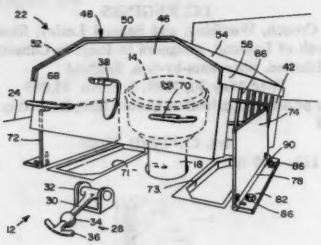
1. An air intake assembly (12) for an enclosure (16), comprising:

a housing (22) having a first ambient air inlet (60) and a second inlet (71) communicating with said enclosure (16); an inlet cover (72);

means (76) for hingingly mounting said inlet cover (72) at a peripheral edge thereof to said enclosure (16) relative to said first and second inlets (60, 71), said inlet cover (72) extending from said hingingly mounting means (76) being hingingly pivotable so as to swing along its edge about said hingingly mounting means (76) between a first position at which said first inlet (60) is covered and a second position at which said second inlet (71) is covered;

means (88) for biasing said inlet cover (72) to the second position;

means (26) for hingingly mounting said housing (22) at a peripheral edge thereof to said enclosure (16) at an axis intersecting that of said hingingly mounting means (76) of said inlet cover (72); and



means (56) for retaining said inlet cover (72) in said first position and wherein said inlet cover (72) is hingingly pivotable to said first position when said housing (22) is hingingly pivoted so as to swing along its edge about said hingingly mounting means (26) of said housing (22) away from said enclosure (16).

4,327,681

INTERNAL COMBUSTION ENGINE HAVING A MAIN COMBUSTION CHAMBER AND AN IGNITION DEVICE INSERTED INTO AN IGNITION CHAMBER

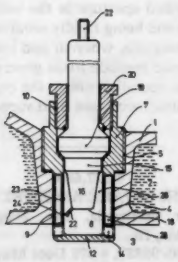
Reinhard Latsch, Vaihingen; Hans Schlembach, Mühlacker, and Dieter Scherenberg, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,666

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 2831452

Int. Cl.³ F02B *19/08*

U.S. Cl. 123—260 **27 Claims**



1. An internal combustion engine including a main combustion chamber and having an ignition chamber communicating by means of at least one transfer channel with said main combustion chamber, said ignition chamber comprising a closed end circular cylinder having a cylindrical wall which projects into said main combustion chamber and having said at least one transfer channel exiting from a lower portion of said cylinder wall substantially radially to the axis of said cylinder and tangentially to the cylindrical wall of said cylinder, said cylinder wall forming a first electrode, an ignition device projecting into said ignition chamber coaxially with said cylinder wall including a second electrode having a portion coaxial with said cylinder wall and a portion extending in a direction away from the coaxial portion toward said cylinder wall adapted to ignite toward said cylindrical wall of the ignition chamber, characterized in that said second electrode forms a spark gap with the surface of said cylinder wall in the lower half of said ignition chamber above said transfer channel in said ignition chamber cylindrical wall.

4,327,682

FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

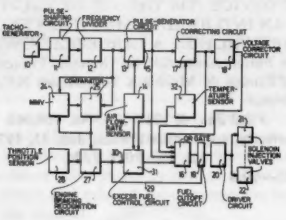
Susumu Harada, Oobu, Japan, assignor to Nippondenso Co. Ltd., Kariya, Japan

Continuation of Ser. No. 84,280, Oct. 12, 1979, which is a continuation of Ser. No. 829,546, Aug. 31, 1977, abandoned. This application Dec. 11, 1980, Ser. No. 215,470

Claims priority, application Japan, Aug. 31, 1976, 51-117531

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—326 **7 Claims**



1. A fuel supply system for use with an internal combustion engine, comprising:

an engine acceleration sensor;

at least one other sensor for sensing another engine operating parameter;

a fuel metering apparatus, to which said sensors are connected and to which said sensors supply signals indicative of the engine operating parameter sensed, said fuel metering apparatus providing an output signal for metering a quantity of fuel for delivery to the engine in accordance with the signals received from the sensors;

a fuel cutoff circuit connected to receive the output signal from the fuel metering apparatus;

an engine braking recognition circuit connected to the fuel cutoff circuit and supplying thereto a signal associated with an engine braking condition, said fuel cutoff circuit interrupting the output signal from the fuel metering apparatus, and therefore fuel metering to the engine, when the signal from the engine braking recognition circuit indicates than engine braking condition exists; and

an additional fuel quantity control circuit connected to the engine braking recognition circuit and to the fuel metering apparatus, said additional fuel quantity control circuit providing a signal to the fuel metering apparatus when the signal from the engine braking recognition circuit indicates that an engine braking condition is terminated so that the fuel metering apparatus provides an output signal for initially metering a quantity of fuel for delivery to the engine in accordance with the signal received from the additional fuel quantity control circuit and thereafter metering a quantity of fuel for delivery to the engine in accordance with the signals received from the sensors.

4,327,683

APPARATUS AND METHOD FOR CONTROLLING THE COMPOSITION OF THE OPERATIONAL MIXTURE IN INTERNAL COMBUSTION ENGINES

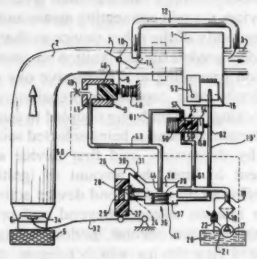
Werner Banzhaf, Sindelfingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,075

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847709

Int. Cl.³ F02D 9/02

U.S. Cl. 123—327 4 Claims



1. In an apparatus for controlling the composition of an operational mixture to be introduced into the combustion chamber of an internal combustion engine, having a fresh air intake line, an exhaust line, an exhaust gas recirculation line extending from the exhaust line into the intake line, a fuel supply means for supplying fuel at a substantially constant pressure, fuel quantity adjusting means, and a fuel supply line extending from the fuel supply means to the fuel adjusting means, said apparatus including

a fuel throttle, disposed in the fuel supply line and having an adjustable metering cross-section,

fuel throttle activating means for adjusting the metering cross-section proportional to the quantity of fresh air flowing into the intake line,

an intake line throttle means for controlling, in a complementary manner, the quantity of fresh air and the quantity of exhaust gas admitted to the intake line,

an hydraulic servomotor means, having a work chamber, for operating the intake line throttle means, wherein the quantity of fresh air admitted into the intake line is proportional to the pressure in the work chamber,

a differential pressure valve means for controlling the flow of fuel therethrough proportional to the pressure across the fuel throttle means,

a fuel overflow line, connected at one end to the fuel relief line through the differential pressure valve means, said overflow line including a fixed throttle and being connected to the work chamber of the servomotor means intermediate the differential pressure valve means and the fixed throttle,

the improvement which comprises:

a connecting line, having one end connected to the fuel supply line intermediate the fuel supply means and the fuel throttle means, and an opposite end connected to the work chamber of the servomotor;

a normally closed valve, disposed in the connecting line; and

valve actuating means for opening the normally closed valve whenever the pressure in the fuel supply line downstream of the fuel throttle means exceeds a predetermined reference value.

4,327,684

FUEL INJECTION AMOUNT - FLUID PRESSURE CONVERSION SYSTEM

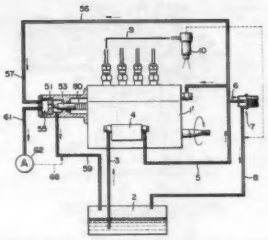
Hiroshi Sami, Numazu, and Tatehito Ueda, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 27, 1979, Ser. No. 61,425

Claims priority, application Japan, Dec. 27, 1978, 53-182120[U]

Int. Cl.³ F02D 1/12

U.S. Cl. 123—387 7 Claims



1. In an internal combustion engine, a device which is the combination of:

a distributor type fuel injection pump which comprises a spill ring as a movable fuel amount determining element, the position of which regulates the amount of fuel provided for injection by the fuel injection pump;

and a conversion device, comprising:

a fixed orifice, to the upstream side of which is supplied a substantially constant fluid pressure;

a fluid passage downstream of the fixed orifice;

a pressure takeoff passage branching from the fluid passage;

a variable orifice downstream of the fluid passage comprising a valve seat and a needle element with a pointed end which cooperates with the valve seat so as to provide a passage of variable effective area, according to the axial movement of the needle element, and wherein the effective opening area of said variable orifice is varied according to the movement of the fuel amount determining element; and

a connecting rod which links the needle element to the spill ring, whereby fluid flows from the upstream side of the fixed orifice through it, through the fluid passage, and through the variable orifice, in that order, and the pressure of fluid at the point where the pressure takeoff passage branches from the fluid passage varies according to the position of the fuel amount determining element.

4,327,685

AIR-FUEL INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kenichi Akutagawa, Kuroishi; Hitoshi Yoshida; Tadashi Hattori, both of Okazaki; Akira Takata, and Tamotsu Fukuda, both of Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 12, 1979, Ser. No. 102,899

Claims priority, application Japan, Dec. 14, 1978, 53/155479

Int. Cl.³ F02D 9/12

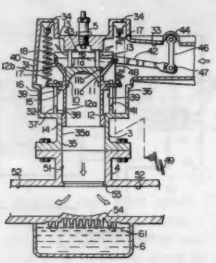
U.S. Cl. 123—402 14 Claims

1. In an intake system for internal combustion engines, said intake system including an intake pipe, fuel supply means for charging fuel into said intake pipe so as to form an air-fuel mixture, and intake manifold for distributing the air-fuel mixture into cylinders of said engine, and a throttling system incorporated in said intake pipe between said fuel supply means and said intake manifold for controlling the flow rate of the

air-fuel mixture to be delivered to said intake manifold, said throttling system comprising:

a stationary valve body spaced apart from said fuel supply means by a predetermined distance in opposed relationship therewith and having a lower indented surface;

a movable hollow valve body containing therewithin said stationary valve body, and having a cone-shaped upper portion and an outer wall surface, a part of which is slidably closely engaged with an inner wall surface of said intake pipe, and an inner wall surface which cooperates with said lower indented surface of said stationary valve



body to define a valve opening in communication with said intake pipe;

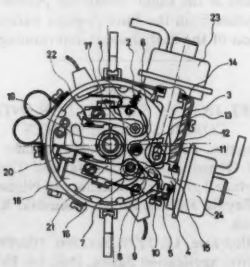
said movable hollow valve body being movable relative to said stationary valve body in an axial direction of the latter to vary a ratio of the opening area of said valve opening to the area of the entire outer circumferential wall surface of said stationary valve body dependent upon the displacement of said movable hollow valve body, thereby controlling an amount of the air-fuel mixture charged into the cylinders of the engine wherein a portion of said stationary valve body is disposed inside said cone-shaped upper portion of said movable hollow valve body.

4,327,686

IGNITION ADVANCE CORRECTION DEVICE

Jean C. Ricci, Bezons, France, assignor to Ducellier & Cie, France

Continuation of Ser. No. 951,627, Oct. 16, 1978, abandoned.
This application Jul. 3, 1980, Ser. No. 165,677
Claims priority, application France, Oct. 20, 1977, 77 31546
Int. Cl.³ F02D *33/00*; F02P *5/12, 5/04*
U.S. Cl. 123—408 **9 Claims**



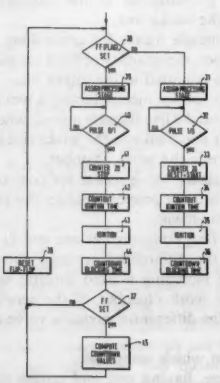
1. An ignition advance correction device for a motor vehicle internal combustion engine, comprising an ignition distributor which has at least one contact breaker arm, a fixed support, an advance lever pivotally mounted on the fixed support and itself pivotally carrying said contact breaker arm, and first and second depression responsive devices connected to the advance lever and adapted to sense variations in pressure at different locations in the engine, a blocking means which includes a connecting means coupling said advance lever to said first depression responsive device and a control element coupling said advance lever to said second depression responsive device, said advance lever being moved in response to variations in pressure sensed by each of said devices, and a blocking element connected to said fixed support and releasably coupled to said first depression responsive device, said blocking element being spaced a predetermined distance from said control element and adapted to contact said control element when said second depression responsive device has moved said predetermined distance, said blocking element being coupled to said first device to be released from said first device by action of said first device after said second device has moved said predetermined distance, whereby said advance lever is moved by each of said devices via said connecting means and said control element independently of the other device so that each device is able to provide a predetermined ignition advance in response to the depression prevailing at a respective one of said locations independently of a depression prevailing at the other device, said blocking element being coupled to said first device and said predetermined distance being selected such that, when not activated by depression, said first device acts via said blocking element to limit the amount of ignition advance which can be effected by said second device acting alone, but permits further ignition advance beyond said predetermined ignition advance by said second device during depression activation of said first device which releases said blocking element from said first device so that said second device acts on said advance lever independently of said first device during said further ignition advance.

4,327,687

TIMING SYSTEM FOR PROCESS CONTROL IN INTERNAL COMBUSTION ENGINES

Georg Haubner, Berg; Werner Meier, Rednitzhembach; Jürgen Wesemeyer, Nuremberg, and Hans Schrumpf, Oberasbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,286
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923425
Int. Cl.³ F02P *3/00*; G06F *1/02*; F02P *5/04*
U.S. Cl. 123—416 **14 Claims**



1. In an internal combustion engine having a rotating shaft, a disk rotating with said shaft and having at least one signal producing segment (12), and a sensor (13) for generating a pickup signal when said segment passes in the operative vicinity thereof, said pickup signal having a signal start (0/1) and a signal end (1/0), and at least first and second control circuits (22,23) for initiating, respectively, a first and second electric

spark discharge in response, respectively, to first and second ignition coil control signals applied thereto: a system for furnishing said first and second ignition coil control signals in response, respectively, to said signal start and signal end comprising

means (14,15) for furnishing a first and second trigger signal in response, respectively, to said pickup signal start and said pickup signal end, respectively;

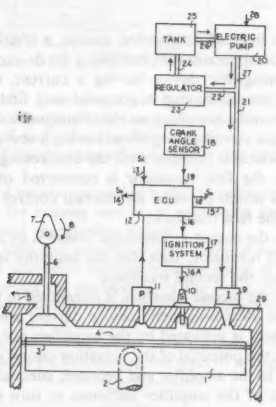
computing means (18,20), connected to said trigger signal furnishing means, for computing, by counting at a predetermined rate, a basic value varying as a function of engine speed and determined by the interval between predetermined pairs of successive trigger signals, for holding said basic counting value at least until receipt of the next subsequent one of said trigger signals and for furnishing said first and second ignition coil control signals at times computed from said basic counting value following receipt of said first and second trigger signal, respectively, and repeating the furnishing of said ignition coil control signals as subsequent trigger signals are received.

4,327,688

CYLINDER PRESSURE CONTROL OF FLUID INJECTION IN AN INTERNAL COMBUSTION ENGINE

Frank E. Lowther, Buffalo, N.Y., assignor to Purification Sciences Inc., Geneva, N.Y.

Filed Apr. 16, 1980, Ser. No. 140,767
Int. Cl.³ F02M *39/00*; F02P *5/04*
U.S. Cl. 123—435 **2 Claims**



1. An internal combustion engine system including a combustion chamber in which a piston reciprocates through a cycle between a top dead center position defining a chamber volume V_1 and a bottom dead center position defining a chamber volume V_2, including:

injector means to introduce liquid fuel and liquid oxidant to said combustion chamber,

ignition means to initiate combustion of said fuel with said oxidant,

control means rendered operable, as determined by the position of said piston in said cycle, to respond to the pressure within said combustion chamber to signal the operation of said injector means and of said ignition means,

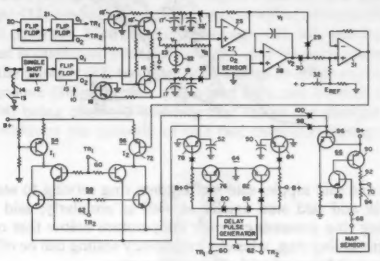
said volume V_1 being a minimal volume required to contain said liquid fuel and liquid oxidant to maximize the expansion ratio V_2/V_1 of said chamber.

4,327,689

COMBINED WARM-UP ENRICHMENT, ENGINE ROUGHNESS AND EXHAUST GAS SENSOR CONTROL FOR EFI ENGINE

Todd L. Rachel, Tournefeuille, France, assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 3, 1979, Ser. No. 81,512
Int. Cl.³ F02D *5/00*
U.S. Cl. 123—436 **7 Claims**



1. In an internal engine having an ignition system generating an ignition cycle, a combined warm-up enrichment, engine roughness sensor and exhaust gas sensor control circuit comprising:

temperature sensing means for sensing the engine operating temperature and providing an output tending to reduce the engine fuel/air ratio as engine temperature increases;

misfire detecting means for detecting engine misfire and providing an output tending to increase the engine fuel/air ratio when misfire occurs;

exhaust gas sensing means for sensing the composition of the engine exhaust gas and providing an output tending to maintain the engine fuel/air mixture stoichiometric;

means for combining the outputs of said temperature sensing means and said misfire detecting means;

means for selecting either said combined outputs or the output of said exhaust gas sensing means for control of the engine fuel/air ratio according to whichever of said combined outputs or said exhaust gas sensing means output possesses the greater magnitude; and

means responsive to said selected output for varying the fuel/air ratio of said engine; and

where said misfire detecting means comprises:

a bistable flip-flop having a pair of outputs which alternate in complementary states;

means synchronized with the ignition cycle for triggering said flip-flop into change of output states;

a capacitor;

means applying a constant charging current to said capacitor when one of said flip-flop outputs is in one state;

means for discharging current from said capacitor at a constant rate when said one flip-flop output is in the state complementary of said one state; and

means providing the average value of the voltage developed across said capacitor.

4,327,690

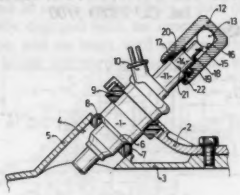
FUEL INJECTION VALVE

Rudolf Sauer, Benningen; Waldemar Hans, Bamberg, and Heinrich Knapp, Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,295
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827878
Int. Cl.³ F02M *55/00*; F02B *77/12*
U.S. Cl. 123—469 **15 Claims**

1. A fuel injection valve such as a magnetic valve, comprising in combination, a valve body having a pressure connection stud, a fuel line plug nipple adapted to be fitted onto said

connection stud, a first elastic sealing ring disposed between said nipple and said stud, at least one other sealing ring disposed adjacent to said first elastic sealing ring between said nipple and said stud, and a heat-resistant stuffing box ring exposed on one side to surrounding air disposed between said



stud and said nipple, said stuffing box ring serving to seal said nipple and said stud axially as well as annularly, said other sealing ring possessing a melt temperature below that of said elastic sealing ring, whereby emergency sealing can be effected upon meltdown of said other sealing ring.

4,327,691

AIR-FUEL-MIXTURE FORMING DEVICE FOR SPARK IGNITION INTERNAL COMBUSTION ENGINES

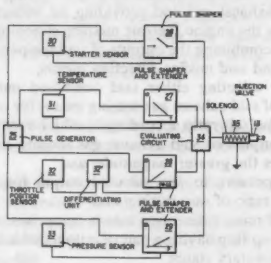
Franz Moser, 47, Gregorygasse, Vienna, Austria, assignor to Franz Moser and Hans Peter Lenz, both of Vienna, Austria

Filed Apr. 10, 1979, Ser. No. 28,880

Claims priority, application Austria, Apr. 27, 1978, 3079/78

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—478 **11 Claims**



1. In a multi-cylinder internal combustion engine which includes a carburetor, a fuel pump, first pipe means for supplying fuel from said fuel pump to said carburetor, and an induction manifold, including branch pipes, connected between the carburetor and the cylinders in the engine for delivering fuel thereto, said carburetor including a throttle valve and said induction pipe including a portion between the carburetor and the branch pipes which includes means for heating the inside of said induction pipe to create a hot spot, the improvement wherein

an electromagnetic fuel injection valve is connected to said induction manifold between said carburetor and said branch pipes,

a second pipe means is connected between said first pipe means and said fuel injection valve for supplying fuel to said fuel injection valve, and

an electrical control means is connected to said electromagnetic fuel injection valve for causing said valve to inject fuel into said induction manifold based on at least one operating parameter of said engine, said electrical control means including a pulse generator, at least one sensor element attached to the engine so as to sense a different operating parameter, and a separate electrical pulse modifier means connected with each sensor element, each said electrical pulse modifier means also being connected to said pulse generator to receive a pulse therefrom, and each said electrical pulse modifier means operating to provide a pulse capable of controlling the operation of said fuel injection valve based on signals received from the associated sensor element.

4,327,692

APPARATUS FOR CONTROLLING THE DE-EXCITATION TIME OF ELECTROMAGNETIC DEVICES, IN PARTICULAR ELECTROMAGNETIC INJECTION VALVES IN INTERNAL COMBUSTION ENGINES

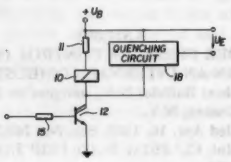
Klaus Harsch, Ditzingen, and Peter Schülzke, Radolfzell-Stahringen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,110

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905900

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—490 **4 Claims**



1. In an internal combustion engine, a continuous control intervention apparatus for controlling the de-excitation time of an electromagnetic device having a current, comprising an actuation circuit, having a potential and first transistor, in series with and controlling an electromagnetic device, further comprising a circuit arrangement having a controllable output potential which is in series with the electromagnetic device,

wherein the first transistor is connected to an actuating means which provides an external control signal to activate the first transistor;

wherein the circuit arrangement contains an amplifier and a second transistor, such that the amplifier is connected to activate the second transistor;

wherein the second transistor is connected to provide a path for the electromagnetic device current when the second transistor is activated by the amplifier; and

wherein the potential of the actuation circuit is applied as an input to the amplifier and becomes adequate to make the output of the amplifier sufficient to turn on the second transistor on non-actuation of the actuation circuit.

4,327,693

SOLENOID DRIVER USING SINGLE BOOST CIRCUIT

Darryl W. Busser, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 1, 1980, Ser. No. 117,679

Int. Cl.³ H01H *47/32*

U.S. Cl. 123—490 **16 Claims**

1. A system for energizing a number of electromagnet devices, the system adapted to receive a plurality of electrical metering pulses, one pulse associated with each device, for activating particular devices, comprising:

a voltage source;

a plurality of electromagnetic devices, each device including a solenoid having a coil having a first terminal connected to said voltage source and a second terminal;

regulating means one associated with each said device for

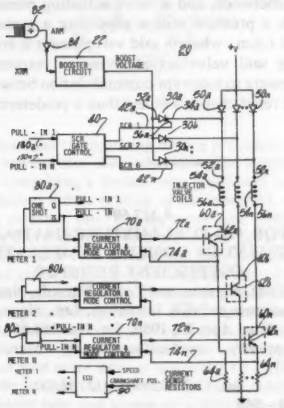
selectively permitting current to flow through specified ones of said devices;

current sensing means connected to each of said regulating means for sensing the level of current flowing through a specific one of said devices;

driver means one associated with each of said devices, connected in series with said coil and said current sensing means for establishing a current flow path therethrough in response to a particular metering signal;

diode means (50) connected in series with said voltage source and the said coil of each of said devices;

boost generator means connected to said voltage source and to each of said devices for periodically generating, prior to each metering pulse, a boost voltage energization signal having a voltage potential greater than the voltage potential of said voltage source;



signal means for generating a pull-in signal in response to the initiation of each of the metering signals wherein the duration of each of said pull-in signals is a determinable fraction of the duration of a particular one of said metering pulses;

boost control means responsive to the plurality of said pull-in signals for causing said boost generation means to regenerate said energization signal;

gate means (30) one associated with each of said devices, having an activation and deactivation states of operation, for controlling the application of the energization signal during the activation state to its associated one of said devices;

gate control means responsive to a particular one of said pull-in signals for controlling the state of said gate means.

4,327,694

UNIT FUEL PUMP-INJECTOR WITH OVERFUEL CAPABILITY AND TIMING RETARDATION

Ralph B. Henson, Creve Coeur, and James L. Martin, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

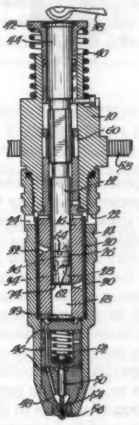
PCT No. PCT/US79/00932, § 371 Date Nov. 1, 1979, § 102(e) Date Nov. 1, 1979, PCT Pub. No. WO81/01314, PCT Pub. Date May 14, 1981

PCT Filed Nov. 1, 1979, Ser. No. 127,991

Int. Cl.³ F02M *59/26, 59/42*

U.S. Cl. 123—500 **4 Claims**

1. In a plunger-type fuel injection pump comprising a pump cylinder (18) having a discharge outlet (38) associated with one end, an upper side port (32) spaced from said outlet (38) and a lower side port (30) located intermediate said upper port (32) in said outlet (38), a fuel supply chamber (20) interconnecting said ports (30, 32) externally of the cylinder (18), and a plunger (12) axially rotatable and longitudinally reciprocable in the cylinder (18) having upper (64) and lower (62) control edges operative to sequentially close the cylinder ends of said upper (32) and lower (30) ports during longitudinal movement of the plunger (12) towards said outlet (38) on the pumping stroke, said plunger (12) having a circumferentially extending groove (26) intermediate of and defined by said control edges (62, 64), and a longitudinal passage (34, 36) connecting said groove (26) to the remote end of said plunger (12), whereby during the pumping stroke fuel in the cylinder (18) between the plunger (12) and outlet (38) is bypassed to the supply chamber (20) until the plunger (12) has advanced far enough to effect closure of both of said ports (30, 32) by said control edges (62, 64), and thereafter fuel is displaced from the cylinder (18) via said outlet (38) until the plunger (12) has further advanced to effect registry of said groove (26) with said lower port (30), said control edges (62, 64) being disposed helically (68, 72) of the plunger (12) axis, whereby the quantity of said fuel displaced during each



plunger (12) pumping stroke may be continually varied over a range of maximum, intermediate and minimum values and whereby the initiation and termination of said pumping stroke may be continually varied by rotational adjustment of said plunger (12), the improvement comprising:

a longitudinal groove (76) extending from said upper control edge (64) away from said circumferential groove (26) and a longitudinal projection (78) extending from said lower control edge (62) into said circumferential groove (26) a distance substantially equal to the extension of said longitudinal groove (76) relatively angularly situated such that the groove (76) will register with said upper port (32) and said projection (78) will register with said lower port (30) to delay the closing of said upper port (32) and the opening of said lower port (30) whereby the initiation of the injection is retarded and the volume of fuel injected is increased.

4,327,695

UNIT FUEL INJECTOR ASSEMBLY WITH FEEDBACK CONTROL

Michael M. Schechter, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

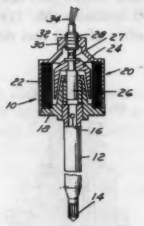
Filed Dec. 22, 1980, Ser. No. 219,107

Int. Cl.³ F02M *59/30*

U.S. Cl. 123—504 **5 Claims**

1. A feedback type fuel pumping and metering assembly consisting of a plunger type fuel pump, an electromagnetic actuator for the plunger pump, and plunger stroke control means all integrated into a single compact unit for controlling the amount and duration of injection of fuel from the pump, a

fuel inlet connected to a source of supply fuel at a low pressure and having a check valve therein, a fuel outlet containing a pressure relief type valve, the inlet being adjacent one end of a plunger axially movable to one position through a fuel intake stroke by the fuel under pressure from the inlet acting thereagainst, the plunger being fixedly secured to and axially aligned with the armature of a solenoid surrounding the plunger for unitary movement whereby energization of the solenoid by electrical impulses thereto effects a movement of the plunger in the opposite direction through a fuel pumping stroke to increase the fuel pressure in the inlet to a level effecting closing of the check valve and an expulsion of the fuel into the outlet, an electrical control means connected to the solenoid providing a source of voltage to the solenoid that varies in



accordance with a predetermined schedule of fuel flow and includes correction means to vary the voltage to the solenoid to adjust the plunger stroke and fuel injection to agree with the predetermined schedule, the stroke control means including adjustable means to vary the length of the intake stroke of the plunger and thereby the maximum volume of fuel inducted to thereby vary the amount of fuel ejected during movement of the plunger through its pumping stroke, the stroke control means also including armature position sensing means located adjacent the armature and operatively connected to the electrical control means providing a feedback control input signal to the correction means to enable the latter means to adjust the magnitude and duration of voltage to the solenoid to vary the magnitude and duration of fuel injection to conform the fuel flow to the predetermined schedule.

4,327,696

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

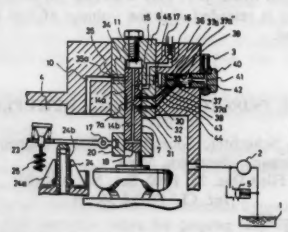
Masayoshi Kobayashi; Toru Sakuranaka, and Kelichi Yamada, all of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Division of Ser. No. 1,285, Jan. 4, 1979, Pat. No. 4,271,808. This application May 21, 1980, Ser. No. 151,905

Claims priority, application Japan, Jan. 20, 1978, 53-004240; Feb. 3, 1978, 53-010563

Int. Cl.³ F02M *39/00, 41/08, 37/04*

U.S. Cl. 123—506 6 Claims



1. A fuel injection pump for an internal combustion engine, which comprises: a housing; a suction chamber defined within said housing; a barrel mounted within said housing; a plunger mounted within said barrel for axial and rotary motion therein; a pump working chamber defined by the housing, the barrel and a top end of the plunger and arranged for communication with said suction chamber; outlet pressure lines for connecting said pump working chamber with associated injection nozzles; a fuel quantity setting member slidably fitted on a bottom end of said plunger; a first relief channel having one end thereof communicating with said pump working chamber; a second relief channel having a portion thereof extending in the plunger to have one end thereof terminating in an outer periphery of the bottom end of the plunger, said end of said second relief channel being so disposed as to disengage from an end edge of said fuel quantity setting member to communicate with said suction chamber after the plunger has executed a predetermined delivery stroke length; a valve means provided across said first and second relief channels for controlling communication therebetween; and a valve actuating means communicating with a pressure source supplying a pressure varying with engine r.p.m.; wherein said valve means is arranged to be actuated by said valve actuating means responsive to said varying pressure to interrupt communication between said first and second relief channels at less than a predetermined engine r.p.m.

4,327,697

HEATER FOR AIR-FUEL MIXTURE HAVING HEATING ELEMENT OF POSITIVE TEMPERATURE COEFFICIENT RESISTOR

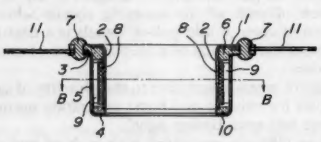
Shigetaka Wada, Kuwana, and Toshio Yamada, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Apr. 29, 1980, Ser. No. 144,838

Claims priority, application Japan, Mar. 27, 1980, 55/39468[U]

Int. Cl.³ F02M *31/12, 53/00*

U.S. Cl. 123—549 25 Claims



1. A heater for an air-fuel mixture having a heating element of a positive temperature coefficient resistor comprising;

a pair of metallic thin cylinders of different sizes each having outward flange portions at least at one end combined with each other as a double cylinder provided with an inner cylinder and an outer cylinder;

a plurality of positive temperature coefficient resistors arranged between said inner and outer cylinders with springs for pressing the positive temperature coefficient resistors to the inner cylinder wall;

an electric insulator plate inserted between the outward flange portions of said inner cylinder and the outward flange portions of said outer cylinder;

a fixing means anchoring between said outward flange portion of the outer cylinder and said outward flange portion of the inner cylinder for fixing integrally with electric insulator plate;

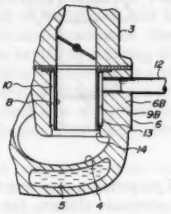
an electrically insulating material inserted between an inner end portion of the inner cylinder and an inner end portion of the outer cylinder for spacing between said inner end portion of the inner cylinder and said inner end portion of the outer cylinder with end gaps so as to insulate said inner end portions of said inner cylinder and outer cylinder.

4,327,698

EXHAUST GAS RECIRCULATING DEVICE

Kyugo Hamai; Tsuyoshi Nakano, and Yoshimi Uchida, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 8, 1980, Ser. No. 110,305
Claims priority, application Japan, Jan. 10, 1979, 54-585
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 11 Claims



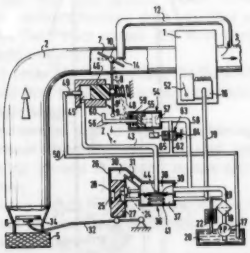
1. An exhaust gas recirculating device provided in an intake manifold at downstream of a carburetor of an internal combustion engine comprising a double tube positioned in the intake manifold adjacent a riser portion of the manifold, said double tube having an inner tube and an outer tube defining a ring shaped space therebetween, wherein mixed gas is arranged to flow inside said inner tube toward said riser portion, a recirculating exhaust gas passageway introducing a part of exhaust gas of the engine is connected to said ring shaped space, an outlet end of said ring shaped space for expelling said recirculating exhaust gas toward said riser portion is narrowed from periphery to increase flowing speed of said recirculating exhaust gas, and an end of said outer tube at the outlet of the ring shaped space is made longer than that of the inner tube to project beyond the inner tube and terminate within said riser portion.

4,327,699

CONTROL FOR OPERATING MIXTURE IN INTERNAL COMBUSTION ENGINES

Karl Reiff, Plochingen; Eberhard Hofmann, Kirchberg, and Josef Güntert, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,438
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940061
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 3 Claims



1. In an open-loop control apparatus for a fuel supply system in an internal combustion engine, wherein the internal combustion engine includes an intake tube through which aspirated air flows, an exhaust gas recirculation line connected to the intake tube, and at least one combustion chamber to receive the recirculated exhaust gas and the aspirated air, wherein the fuel supply system includes a fuel supply pump which provides fuel to the at least one combustion chamber, a fuel metering device connected to the fuel supply pump, a control device connected to regulate the exhaust gas flow in the exhaust gas recirculation line, a throttle device connected to regulate the aspirated air flow in the intake tube, a first servomotor connected to actuate the throttle device and the control device in a complementary manner, and wherein the servomotor is connected to be actuable by the fuel supply pump pressure, a first biasing spring connected to bias the first servomotor counter to the fuel supply pump pressure; and wherein the open-loop control apparatus includes:

a second servomotor, having a work chamber, connected to be actuable by the fuel supply pump pressure, and further having a holder element;

a second biasing spring connected to bias the second servomotor counter to the fuel supply pump pressure;

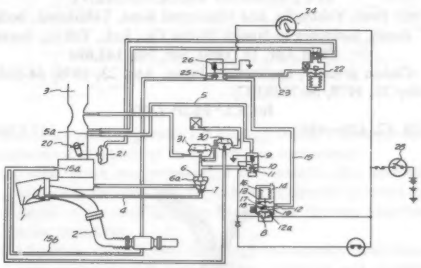
wherein the holder element is mounted to limit the movement of the first servomotor depending on work chamber pressure such that the throttle device is in an open position when work chamber pressure falls to zero.

4,327,700

EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Masatoshi Obata, and Norio Satoh, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,669
Claims priority, application Japan, Aug. 11, 1979, 54-101800
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 3 Claims



1. In combination with an internal combustion engine having an intake passage and an exhaust passage, and an exhaust gas return passageway having a recirculation control valve therein, the improvement comprising, in combination: a suction conduit, an actuator for said control valve responsive to vacuum pressure in said suction conduit, means including a magnetic valve for venting said suction conduit to atmosphere, atmospheric pressure compensation means, and means for operating said magnetic valve including a vacuum switch responsive to suction pressure in said intake passage modified by said atmospheric pressure compensation means.

4,327,701

ALTERNATING CURRENT ENERGIZED IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

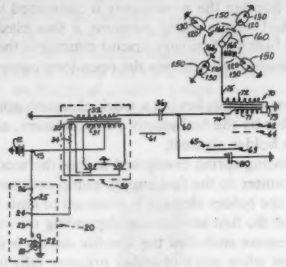
Continuation-in-part of Ser. No. 112,533, Jan. 16, 1980, Pat. No. 4,293,797. This application Jul. 3, 1980, Ser. No. 165,719
Int. Cl.³ F02P *3/04*
U.S. Cl. 123—598 9 Claims

1. An ignition system for an engine which develops motive power by burning fuel, comprising the combination of:

an ignition transformer having a primary winding:

an alternating current generator having only one output

transformer with only three windings and including active electronic power generating means, a first of said three windings being connected to said active electronic power generating means, a second of said three windings being coupled to said primary winding and forming a passive



switchless network therewith, said active electronic power generating means and said first of the three windings forming an oscillatory circuit; and

timing means, coupled to a third of said three windings, for controlling DC bias current to said active electronic power generating means.

4,327,702

PLASMA JET IGNITION SYSTEM WITH NOISE SUPPRESSING ARRANGEMENT

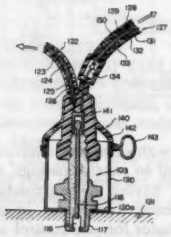
Iwao Imai, Yokosuka, and Masazumi Sone, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,694

Claims priority, application Japan, Apr. 23, 1979, 54-50561; May 29, 1979, 54-72892[U]

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—620 **12 Claims**



1. A plasma jet ignition system comprising:

a spark energy storage system;

a plasma jet energy storage system;

a plasma jet ignition plug;

a spark energy delivery cable in the form of a high tension resistance cable connecting said plasma jet ignition plug to said spark energy storage system;

a plasma jet energy delivery cable connecting said plasma jet ignition plug to said plasma jet energy storage system, said plasma jet energy delivery cable including an electrically conductive coil in the form of a wire-wound noise prevention lead and having one end connected to said plasma jet ignition plug and an opposite end connected to said plasma jet energy storage system, the winding pitch of said coil being chosen so as to filter high frequency components, and wherein the winding pitch of said coil in the proximity of said plasma jet ignition plug is smaller than that within the remaining portion of said coil.

4,327,703

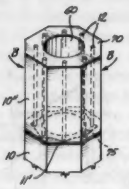
METHOD OF PREPARING CONCRETE COLUMN FOR ATTACHMENT TO BEAM

Allen L. Destree, 5218 92nd SW., Everett, Wash. 98204

Continuation-in-part of Ser. No. 82,954, Oct. 9, 1979, abandoned. This application Feb. 8, 1980, Ser. No. 119,983

Int. Cl.³ B28D *1/00*

U.S. Cl. 125—1 **5 Claims**



1. A method of preparing a concrete column having elongated reinforcing elements therein, for engagement with a superjacent cast-in-place concrete member comprising the steps of:

establishing an elevation for said superjacent cast-in-place concrete member;

severing said column at a predetermined distance above said elevation;

scoring the periphery of said column at said elevation to a depth insufficient to contact said elongated reinforcing elements but sufficient to prevent spalling of concrete from said column below said elevation;

removing concrete from the center of said column to said elevation, leaving a hollow column segment above said elevation; and

crushing and removing the concrete in said column above said elevation to expose said reinforcing elements whereby said elements may be cast into said cast-in-place concrete member to form an interlocking bond between said column and said cast-in-place concrete member.

4,327,704

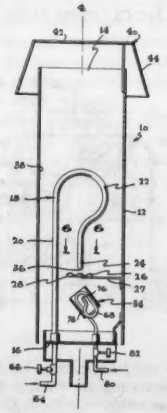
ORCHARD HEATER

Robert U. Fredrickson, 600 E. Valencia, Burbank, Calif. 91501

Filed Nov. 5, 1979, Ser. No. 90,904

Int. Cl.³ A01G *13/06*; F24H *1/00*; A01G *13/00*

U.S. Cl. 126—59.5 **17 Claims**



1. A heater for use in combination with a fuel source comprising:

a combustion chamber having an enclosing side wall, said combustion chamber having a longitudinal center axis;

burner means fixedly located within said chamber spaced from said side wall effective to ignite fuel from said fuel source producing heated gases;

first deflecting means fixedly mounted within said combustion chamber to direct said heated gases transversely to said longitudinal center axis and against said side wall to thereby heat the said side wall, said heat is to then be radiated into the ambient;

second deflecting means connected with said combustion chamber located to encounter said heated gases being discharged from said combustion chamber, said second deflecting means having an encasing side wall, said encasing side wall being located about a portion of said said enclosing side wall, said encasing side wall being spaced from said enclosing side wall, heat being radiated from said second deflecting means in an outward direction into the ambient;

said burner means comprises a main burner formed of an elongated member which includes a looped portion terminating in a discharge orifice, said discharge orifice being located on said longitudinal center axis; and

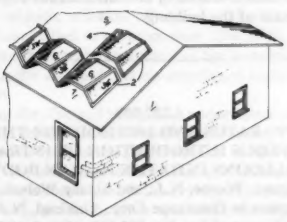
said burner means further comprises a pilot burner, said first deflecting means being located between said main burner and said pilot burner.

4,327,705

SOLAR HEAT RECOVERY CONTROL

Edward M. Steutermann, 2800 First National Tower, Louisville, Ky. 40202

Filed Nov. 1, 1979, Ser. No. 90,265
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **8 Claims**



1. A heat transfer arrangement to transfer heat to a heat transfer fluid to be heated including:

(a) at least one first heat source means having first fluid passage means therethrough with said first passage means having first fluid inlet means and first heat source heat transfer fluid outlet means;

(b) first valve means for controlling the flow of heat transfer fluid to said first fluid inlet means and through said first fluid passage means;

(c) at least one second heat source means having second fluid passage means therethrough with said second passage means having second fluid inlet means and second fluid outlet means;

(d) second valve means for controlling flow of heat transfer fluid to said second fluid inlet means and through said second fluid passage means;

(e) first fluid bypass conduit means connected between said first fluid outlet means and said second valve means;

(f) second fluid bypass conduit means connected between said second fluid outlet means and said first valve means;

(g) source of heat transfer fluid to selectively supply heat transfer fluid to at least one of said first and second valve means;

(h) first and second temperature measure means to determine the effective heat transfer temperature available at each of said first and second heat source means and provide first and second temperature signals;

(i) heat transfer fluid flow control means responsive to said first and second temperature signals to operate said first valve means and second valve means so heat transfer fluid selectively flows from said source of heat transfer fluid to the one of said first and second heat source means at the lowest effective heat transfer temperature then to one of said first and second heat source means having the higher effective heat transfer temperature;

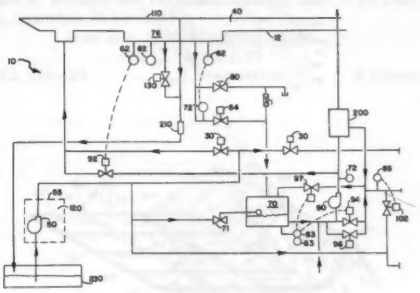
(j) output conduit means to selectively withdraw heat transfer fluid from at least one of said first and second fluid outlet means.

4,327,706

SOLAR POND APPARATUS

Jack A. Nickerson, 48 Hillcrest Rd., East Weymouth, Mass. 02189

Filed Nov. 10, 1980, Ser. No. 205,667
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **7 Claims**



1. A solar pond apparatus for heating liquids which are solar absorbtive and provided from a source comprising:

(a) solar pond means having a substantially flat, extended surface with upwardly directed sides thereof to retain said liquid while said liquid is exposed to the sun absorbing solar radiation;

(b) flooding valve means connected to said solar pond means and moveable between an open position and a closed position to provide said liquid from said source and flood said liquid upon said substantially flat, extended surface of said solar pond means;

(c) means to control the depth of said solar absorbtive liquid;

(d) flooding valve control means connected to said flooding valve means and to said means to control the depth of said solar absorbtive liquid, which activates said flooding valve means to said open position when said means to control the depth of said solar absorbtive liquid determines said first level of said liquid in said solar pond means and which activates said flooding valve means to said closed position when said means to control the depth of said solar absorbtive liquid determines said second level of liquid in said solar pond means;

(e) first liquid conduit means connect said source to said flooding valve means;

(f) drainage valve means connected to said solar pond means moveable between an open position and a closed position to drain said liquid from said solar pond means;

(g) first sensor means attached to said solar pond means and arranged to sense a predetermined temperature;

(h) drainage valve control means connected to said drainage valve and to said first sensor means which activates said drainage valve means to said open position when said first sensor means senses said predetermined temperature;

(i) storage means connected on one end to said drainage

valve means to receive said liquid at said predetermined temperature therefrom, and on the other end to an outlet means;

(j) second liquid conduit means connecting said drainage valve means to said storage means.

4,327,707

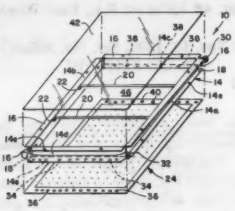
SOLAR COLLECTOR

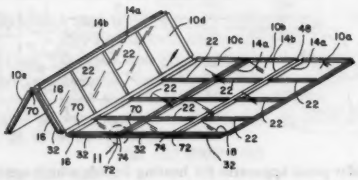
William G. Wilhelm, Cutchogue, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 20, 1979, Ser. No. 96,260

Int. Cl.³ F24J 3/02

U.S. Cl. 126—426 **9 Claims**





1. A solar collector comprising:

(a) a perimetric frame defining a substantially open central portion having two spaced, substantially planar sides;

(b) glazing, substantially congruent to said frame, covering one of said sides and fastened to said frame; and,

(c) a thin film absorber, substantially congruent to said frame, covering the other of said sides and tautly bonded around the edges to said frame, whereby said frame and said absorber cooperate to form a light-weight, high-strength monocoque structure, said absorber further comprising two substantially congruent thin films bonded together around their edges to form an envelope having a high surface area to volume ratio and openings for introducing and removing a heat transfer fluid to and from said envelope; and

(d) manifold means for providing a flow of heat transfer fluid through said absorber.

4,327,708

SOLAR SIDING FOR BUILDINGS

Don A. Taylor, 216 Mill St., Wadsworth, Ohio 44281

Filed Jul. 16, 1979, Ser. No. 57,508

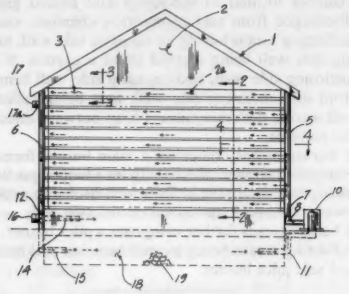
Int. Cl.³ F24J 3/02

U.S. Cl. 126—429 **9 Claims**

1. In combination, a building having an upright exterior side wall with an upright outer face;

solar elements, each in the form of an elongated siding strip of heat conducting sheet material having lateral margins and secured to the wall at the outer face thereof with adjacent lateral margins of adjacent strips in overlapping relation to each other, and, in assembled array on the wall, providing a solar cover which extends endwise of the strips from one margin of the wall to the opposite margin of the wall;

each strip having a show portion between its said lateral margins and which is positioned so as to be spaced outwardly from the outer face of the wall when the strip margins are connected to said wall, thereby to provide space for passage of air, endwise of the strips, between the cover and said outer face of the wall from said one margin of the wall to said opposite margin of the wall;



an inlet manifold at said one margin of the wall and having outlet means in communication with said space between said cover and outer face of the wall;

an outlet manifold at the opposite margin of the wall and having inlet means in communication with said space;

said inlet manifold having air inlet means for admission of air thereinto for delivery through said space; and

said outlet manifold having air outlet means connectable to the interior of the building.

4,327,709

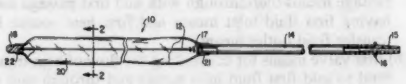
APPARATUS AND METHOD FOR THE PERCUTANEOUS INTRODUCTION OF INTRA-AORTIC BALLOONS INTO THE HUMAN BODY

Bruce L. Hanson, Wayne, N.J., and Sidney Wolvek, Brooklyn, N.Y., assignors to Datascope Corp., Oakland, N.J.

Continuation-in-part of Ser. No. 883,513, Mar. 6, 1978, Pat. No. 4,261,339. This application Oct. 18, 1979, Ser. No. 86,150

Int. Cl.³ A61M 29/02

U.S. Cl. 128—1 D **23 Claims**



1. A system for percutaneous insertion of an intra-aortic balloon comprising in combination:

a flexible hollow sheath having an end adapted to be inserted into an artery of a subject through a puncture,

a balloon catheter comprising

a catheter tube,

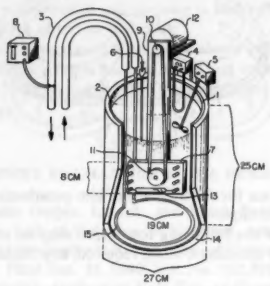
a balloon envelope having one end connected to one end of said catheter tube, and

an elongated flexible support member within said envelope having one end coupled to the other end of said envelope which is remote from said catheter tube, said envelope folding generally longitudinally along the axis of said support member to have a reduced diameter sufficiently small to be inserted through said sheath into the artery.

4,327,710
PROCESS FOR ENCAPSULATING ADDITIVES IN RESEALED ERYTHROCYTES FOR DISSEMINATING CHEMICALS VIA THE CIRCULATORY SYSTEM

John R. DeLoach; Robert L. Harris, both of Bryan; Garret M. Ihler, College Station, and Richard T. Mayer, Bryan, all of Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 18, 1980, Ser. No. 160,753
Int. Cl.³ A61M 5/00
U.S. Cl. 128—1 R 18 Claims



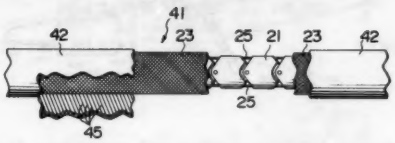
1. A process for encapsulating additives in resealed erythrocytes of the blood of certain animals to provide a means of disseminating additives via the circulatory system of said animals, the process comprising:
(a) withdrawing whole blood from a live animal,
(b) separating the erythrocytes from the serum and the other cells,
(c) placing the erythrocytes in a dialysis membrane containing an isotonic solution of sodium chloride, said membrane being filled to no more than 75% of its volume,
(d) inflating the remaining volume of the membrane with air,
(e) placing the charged dialysis membrane under hypotonic solution,
(f) rotating the charged membrane under hypotonic solution for about from 30 to 60 minutes, thus causing a swelling of the erythrocytes until pores appear in the erythrocyte membrane, allowing intracellular and extracellular contents to equilibrate across the erythrocyte membrane,
(g) removing the erythrocyte solution from the membrane and mixing with a hypotonic solution containing an additive,
(h) rotating the re-charged membrane under isotonic solution for about 60 minutes, thus causing through the adjustment of osmolality the annealing of the erythrocyte cell membrane, to yield an additive which is encapsulated within resealed erythrocytes,
(i) placing the resealed erythrocytes in an isotonic solution and separating the resealed erythrocytes from the unencapsulated additive, and
(j) injecting the isotonic solution of resealed erythrocytes into the circulatory system of the same species of animal from whence the whole blood was withdrawn.

4,327,711
FLEXIBLE TUBE FOR AN ENDOSCOPE

Takeji Takagi, Machida, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Oct. 24, 1980, Ser. No. 200,480
Claims priority, application Japan, Nov. 16, 1979, 54/148475
Int. Cl.³ A61B 1/00
U.S. Cl. 128—4 7 Claims

1. A flexible tube for an endoscope, comprising:
a control wire and an optical system extending along a longitudinal axis of said tube;
a metallic braided sheath extending along said axis and surrounding said control wire and said optical system; and
a sheath tube extending along said axis and surrounding said braided sheath such that an internal peripheral surface of

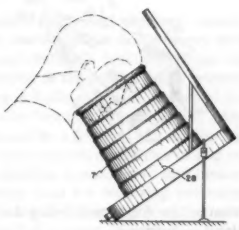


said sheath tube is disposed in opposing relationship with said metallic braided sheath, said internal peripheral surface being formed with grooves which retain an anti-friction agent therein.

4,327,712
IMAGESCOPE

Richard E. Frenkel, and Barbara I. Frenkel, both of 33 Park Rd., Scarsdale, N.Y. 10583

Filed Dec. 3, 1979, Ser. No. 99,883
Int. Cl.³ A61B 1/06
U.S. Cl. 128—22 8 Claims



1. A psychotherapeutic imagescope useful in the treatment of a patient suffering emotional disorders comprising
(a) a mirror;
(b) lighting means capable of directly illuminating said mirror with a plurality of diverse colors and hidden from direct view of the patient;
(c) a housing containing said lighting means and supporting said mirror;
(d) electrical control means on said housing for the patient to select a desired illuminating color;
(e) a tubular structure mounted on said housing surrounding said mirror and having on the other end means to surround the face of the patient and permit him to directly view his facial image in said illuminated mirror.

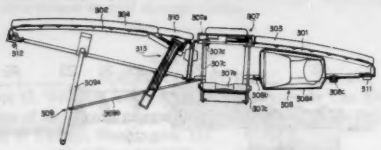
4,327,713
MULTI THERAPEUTIC DEVICE FOR USE IN DYNAMIC THERAPY

Yasukichi Okazaki, and Tatsuo Okazaki, both of Kamifukuoka, Japan, assignors to Kabushikigaisha Omco, Saitama, Japan

Filed Sep. 19, 1980, Ser. No. 188,951
Int. Cl.³ A61H 1/00
U.S. Cl. 128—33 17 Claims

1. A multi therapeutic device for use in dynamic therapy characterized by comprising a reversible motor having an output shaft capable of being changed in two opposite revolving directions thereof; first and second one-way clutch means operable to the opposite revolving directions respectively so as to be alternatively connected with the output shaft; first and second eccentric rotor means driven by the motor power given via their one-way clutch means respectively; means for vibra-

tion driven by the first eccentric rotor means; means for taking out an orbital motion from the motion of the second eccentric rotor means; means for vertical dynamic motion including one



or more reciprocating members with one or more dynamic therapy members; and means for changing the orbital motion to a suitable motion for use of and transmitting the motion to the vertical dynamic motion means.

4,327,714

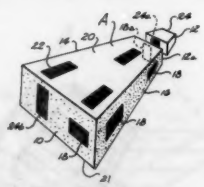
DISPOSABLE ORTHOPEDIC SUPPORT

Donald C. Spann, 5 Ferncreek Ct., Greenville, S.C. 29615

Continuation-in-part of Ser. No. 780,761, Mar. 24, 1977, Pat. No. 4,135,504. This application Jan. 22, 1979, Ser. No. 5,495

Int. Cl.³ A61F *3/00*

U.S. Cl. 128—80 A **11 Claims**



1. An abduction pillow for immobilizing the lower limbs of orthopedic patients comprising:

a wedge shaped body defined by first and second ends, first and second sides extending between said first and second ends, said first end being widened relative to said second end whereby said first and second sides diverge away from said second end;

a removable elongated outer cover strip of synthetic foam material carried about said first side, said second end, and said second side generally assuming said divergent shape of said wedge shaped body;

connecting means carried at spaced positions on said outer cover strip and said wedge shaped body releasably attaching said outer cover strip to said wedge shaped body;

space strapping constructed of flat substantially rectangular strips of synthetic foam material extending about spaced portions of each limb fixing same against said outer cover strip at respective sides of said wedge shaped body, said wedge shaped body between said cover strip and said sides maintaining said limbs in divergent fixed positions corresponding to the divergent disposition of said sides;

fastening means carried at spaced positions on said wedge shaped body and on one side adjacent the ends of said strapping;

said fastened strapping cooperating with said wedge body so that said limbs may be secured at spaced locations thereabout for immobilizing the limbs in spread position; and

said second end of said wedge shaped body includes a removable apex portion causing said wedge shaped body to be truncated when removed thereby shortening said wedge shaped body to create a void space between said wedge shaped body and the pelvic area of the patient facilitating the placement and removal of tubing and the like inserted in the body of the patient.

4,327,715

DEVICE FOR FORMING COSTAL PROSTHESES

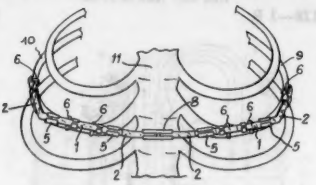
Pierre Corvisier, 133 Marechal Oudinot St., 54000 Nancy, France

Filed Nov. 12, 1980, Ser. No. 206,007

Claims priority, application France, Nov. 13, 1979, 79 28157

Int. Cl.³ A61F *5/04*; A61B *17/18*

U.S. Cl. 128—92 B **3 Claims**



1. In a device for forming a thoracic prosthesis comprising small bars and clips,

elements of the following four types may be combined together to constitute, when required, any thoracic prosthesis:

(a) small thin, narrow, straight bars,

(b) small thin, narrow, bent bars having a straight part and an inclined part making with the extension of the straight part an angle chosen between 15° and 45° in clockwise direction for one half and in anticlockwise direction for the other half of the bent bars, the straight part being provided at its end opposite the inclined part with a pair of crimping jaws adapted to receive and allow a straight bar to a bent bar to slide therebetween, and to be crimped thereafter on said bar to immobilize it,

(c) individual clips comprising on one side a pair of crimping jaws and on the opposite side a pair of clamps which may be closed on a rib,

(d) straight connecting members comprising a pair of crimping jaws adapted to receive and firmly connect straight bars in line with each other.

4,327,716

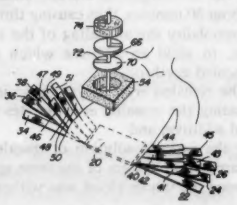
EMERGENCY STABILIZER FOR AN IMPALEMENT IN THE HUMAN BODY

Walter A. Ansted, 1325 Suffolk Ave., Westchester, Ill. 60153

Filed Oct. 6, 1980, Ser. No. 194,762

Int. Cl.³ A61F *13/00*

U.S. Cl. 128—133 **4 Claims**



1. A stabilizing device for impaled objects having a shoulder entering the human body comprising:

(a) a base pad;

(b) a series of anchoring straps secured to and extending from opposite sides of said base pad;

(c) a series of stabilizing straps having one end of each secured to each of said anchoring straps adjacent the base pad and the other end having latching means thereon;

(d) a lower, soft, pliable, thick pad to lie against the body having an enlarged medial opening therein in which the impaled object projects;

(e) a series of thin, nonpliable disks each having a cleft therein for placement around the impaled object with each cleft placed 90° from the other and positioned below the shoulder of the impaled object;

(f) a soft, pliable, thick, circular insert pad having a cleft therein positioned in said medial opening with the impaled object seated in said cleft;

(g) a second thick, enlarged, soft, pliable pad having an enlarged medial opening therein to seat on said lower pad; and

(h) a small, thick, pliable, circular insert pad having a cleft therein positioned in said opening in said second pad with the impaled object in said cleft;

said stabilizing straps secured together above said second pad, and the anchoring straps secured thereover exerting pressure towards the body to stabilize the impaled object.

4,327,717

HUMIDITY EXCHANGER FOR A BREATHING APPARATUS

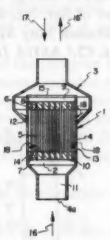
Georg-Wilhelm Oetjen, Lübeck, and Frank Benthin, Lübeck-Hamberge, both of Fed. Rep. of Germany, assignors to Dräger werk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 24, 1980, Ser. No. 162,599

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929615

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—201.13 **10 Claims**



1. A humidity exchanger for a breathing apparatus comprising an elongated housing having a bore extending therethrough for passing one of inspiration air and expiration air from an inlet opening to an outlet opening, axially spaced packings adjacent said inlet opening and said outlet opening dividing said housing into an inflow chamber and an outflow chamber and a tubule bank chamber therebetween, a bundle of fiber tubules in said tubule bank chamber, each of said fiber tubules having opposite ends extending through said axially spaced packings to define flow passages therethrough from said inflow chamber to said outflow chamber and a space around the exteriors of said tubules between said packing and within said housing, said tubules being made of a material permeable to humidity, a first connection piece mounted to said housing about said outlet opening to define an outlet compartment therebetween, said housing having means for directing the other of said one of inspiration air and expiration air from said outlet compartment to and through said space and along the exterior of said tubules in indirect heat exchange and humidity exchange with said one of inspiration air and expiration air in said flow passages and from said space to atmosphere, and non-return valve means mounted to said outlet opening for selectively opening a path from said outflow chamber for passing said one of inspiration air and expiration air from said flow passages and closing said outflow chamber for preventing the passage of the other of said inspiration and expiration air to said flow pasasges.

4,327,718

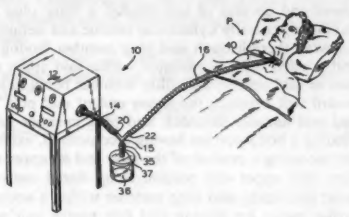
CONTINUOUSLY DRAINING TRAP FOR REMOVAL OF CONDENSATE FROM A PATIENT BREATHING CIRCUIT

Richard A. Cronenberg, Ramsey, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Sep. 18, 1980, Ser. No. 188,393

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—205.12 **5 Claims**



4. A patient breathing apparatus comprising:

means for controllably providing fluid from a source under pressure to a patient in accordance with pre-established breathing rhythm;

means for delivering said fluid under pressure to the patient; and

means associated with said delivery means for allowing condensate, but not gas, in said delivery means to continuously and automatically drain therefrom while the fluid is being delivered to the patient under pressure, including a trap having: a hollow, plastic Y-shaped tubular member having tubular laterally extending side arms connected at one end thereof to a first end of a tubular base; a fluid inlet opening at the opposite end of one of said side arms of said Y-shaped member connected to said means for controllably providing fluid for receiving pressurized flud therefrom; a fluid outlet opening at the opposite end of the other of said side arms of said Y-shaped member connected to said means for delivering fluid to the patient; a drain opening at the opposite end of the base of said Y-shaped member; a passageway inside said member providing fluid communication among all of the aforesaid openings; and a liquid-pervious, gas-impervious membrane covering said drain opening so that condensate in said member can continuously drain through said drain opening by force of gravity while fluid is passing through the patient breathing apparatus up to pressures of about seven-hundred (700) grams per square centimeter.

4,327,719

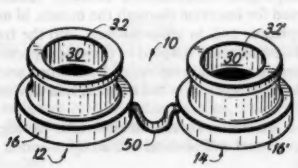
NOSE FILTER

Irene J. Childers, Rte. 3, Box 325, Dandridge, Tenn. 37725

Filed Dec. 15, 1980, Ser. No. 216,261

Int. Cl.³ A62B *7/10*

U.S. Cl. 128—206.11 **8 Claims**



1. A nose filter for filtering air breathed through the nostrils, said filter comprising:

a first nostril unit for filtering air inhaled through one nostril of user's nose and a further nostril unit for filtering air

inhaled through the other nostril of the user's nose, each of said units including a holder having a substantially cylindrical configuration with a bore therethrough, said holder defining a upper end portion and a lower end portion, said lower end portion defining an annular shoulder section such that the bore extending through the lower end portion of said holder has a reduced diameter, a filter member having a cross-sectional outline approximately equal to the cross-sectional outline of the holder bore in said upper portion, said filter member defining a perimeter which rests on the shoulder section of said lower end portion of said holder, a filter plug member having a generally cylindrical outline and defining a passageway therethrough said plug member having a lower end portion slidably mounted within said upper end portion of said holder, said filter member being held in said nostril unit between the lower end of said plug member and said annular shoulder, said plug member further including a body portion having a contoured, external wall for receiving a portion of the nose and an upper end portion, said upper end portion being flared outwardly to assist in holding said plug member within a nostril, and

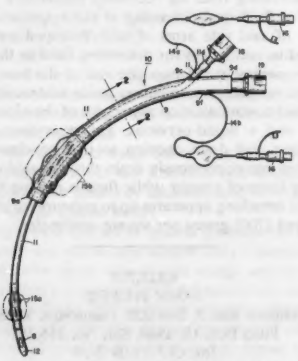
securing means for joining said first nostril unit with said further nostril unit at a preselected spaced location, said securing means serving to bias said first nostril unit towards said further nostril unit such that the septum of the nose is anatomically engaged by said plug member of said first nostril unit and said plug member of said further nostril unit whereby said filter is releasably mounted on the nose of a user.

4,327,720

ESOPHAGEAL-ENDOTRACHEAL AIRWAY

Paul A. Bronson, Rte. 1, Box 239W, and Patrick A. Wallace, 6810 Prutzman, Apt. #31, both of Beaumont, Tex. 77706

Filed Jan. 22, 1979, Ser. No. 5,645
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—207.15 **4 Claims**



1. An esophageal-endotracheal, flexible, tubular airway device adapted for insertion through the mouth, in normal use, into the esophagus and, in abnormal use, into the trachea of a patient, said device being adapted to provide separate passages for administering artificial respiration both when said device is lodged in the esophagus or in the trachea, said device comprising:

(a) a larger-diameter, shorter flexible tube having an open-ended proximal end portion and an open-ended distal end portion;

(b) a smaller-diameter, longer flexible tube having an open-ended proximal end portion and an open-ended distal end portion, said longer tube being disposed inside said shorter tube whereby the outer wall of said longer tube and the inner wall of said shorter tube define therebetween an annular fluid passageway wherein a suction tube could be extended through said passageway into said trachea or said esophagus for evacuating fluid contents therefrom while administering artificial respiration to the lungs, said annular passageway having an open outlet port at the distal end portion of said shorter tube, and said longer tube having a sufficient length adapted, in use, to reach into the esophagus below the mouth of the trachea, and said port of said annular passageway to become disposed above the mouth of the trachea;

(c) an inflatable-and-deflatable tubular balloon extending about and sealed to said distal end portion of said longer tube for sealingly engaging, in normal use, upon inflation thereof the wall of the esophagus below the mouth of the trachea and, upon abnormal use, for sealingly engaging the wall of the trachea; and

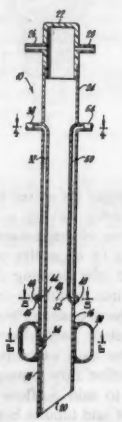
(d) an inflatable-and-deflatable tubular balloon extending about and sealed to the distal end portion of said shorter tube for simultaneously sealing off, in normal use, upon inflation thereof, the air passageways leading to the nose and to the mouth of the patient, thereby allowing, in normal use, with said two balloons inflated, air to flow through said annular passageway into the patient's lungs.

4,327,721

ENDOTRACHEAL TUBE WITH TOPICAL AGENT DELIVERY SYSTEM AND METHOD OF USING THE SAME

Jack Goldin, Los Angeles, and Richard R. Pagano, Northridge, both of Calif., assignors to George Hanover, Encino, Calif.

Continuation-in-part of Ser. No. 922,621, Jul. 7, 1978, abandoned. This application May 31, 1979, Ser. No. 44,784
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—207.15 **18 Claims**



1. A medical device for insertion into a body passage comprising:

a flexible insertion tube having a forward end and a rearward end, said tube being defined by a substantially cylindrical wall;

means provided in said insertion tube wall for spraying a topically active fluidic agent outwardly with respect to the tube;

first lumen means positioned and lying along a portion of said insertion wall and formed at least partially by said wall, said first lumen means having a forward end in fluid communication with said spraying means and a rearward end located approximate to said insertion tube rearward end;

an expansible cuff member circumferentially extending around said insertion tube wall, located between said spraying means and said insertion tube forward end, said cuff and spray means being operable independently of each other; and

second lumen means positioned and lying along a portion of said insertion tube wall and formed at least partially by said wall, said second lumen means having a forward end in fluid communication with the interior of said expandable cuff member and a rearward end approximate to said insertion tube rearward end.

4,327,722

METHODS AND APPARATUS FOR INTRAVENOUS THERAPY AND HYPERALIMENTATION

LeRoy E. Groshong, 6446 SW. Raab Rd., and Ronald J. Brawn, 5712 SW. 52nd, both of Portland, Oreg. 97221

Filed Aug. 20, 1979, Ser. No. 67,753
Int. Cl.³ A61M 25/00
U.S. Cl. 128—214.4 28 Claims

1. A method of performing intravenous therapy including hyperalimentation comprising the steps:

inserting the proximal end of a flexible catheter having a one way valve adjacent its proximal end through the skin of a patient and into a vein having a suitably large flow of blood therethrough;

coupling the distal end of the catheter to an interchangeable static flow reducing means capable of restricting flow of fluid, from a source positioned to provide a predetermined fluid head, into said catheter at a rate no greater than a predetermined clinically described flow rate,

coupling a source of intravenous solution to said flow reducing means,

positioning said source at an elevation to provide said fluid head,

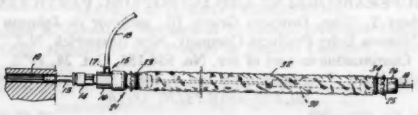
and allowing said solution to flow by gravity through said flow reducing means into said catheter and thence into said vein.

4,327,723

CATHETER SHIELD

Paul L. Frankhouser, Reading, Pa., assignor to Arrow International, Inc., Reading, Pa.

Filed May 13, 1980, Ser. No. 149,478
Int. Cl.³ A61M 5/00, 25/00
U.S. Cl. 128—214.4 9 Claims



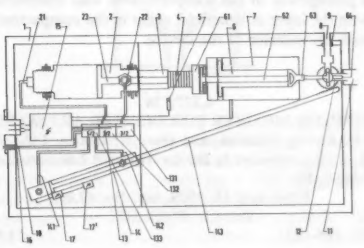
1. A shield assembly for an indwelling catheter comprising front and rear hubs each having central passages, said passages each being sized to permit movement of said catheter through said hubs, feed tube means for interconnecting said front and rear hubs including disconnectible means for separating the front hub from the rear hub, said feed tube means having a lumen extending between the passages in the hubs for the guidance of a catheter passed through the rear hub out through the front hub, a flexible sheath interconnecting the two hubs, said sheath providing a covering for the feed tube means and having a length substantially longer than the feed tube means, said sheath being collapsible to permit interconnection of the two hubs by the feed tube means for catheter guidance during feeding of a catheter through the rear hub, through the feed tube means and through the front hub and being extendible to shield a substantial length of catheter from contamination when the front hub and the rear hub are separated.

4,327,724

PNEUMATICALLY OPERABLE INJECTION DEVICE

Michael Birk, Liebigstrasse 5, 8000 München 22, and Ullrich Pfeiffer, Walserstrasse 8, 8000 München 80, both of Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,582
Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2922037
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 A 7 Claims



1. A pneumatically operable injection device, characterized by a first pressure cylinder comprising a piston which is adapted to be rigidly but detachably connected to a piston of an injection syringe, a second pressure cylinder comprising a piston having an extension adapted to co-operate with a three-way cock in such a manner as to cause said three-way cock to be operated by movement of said piston, a flow connection between the outlet of said injection syringe and said three-way cock, a flow connection between said three-way cock and a connecting piece, a flow connection leading to an inlet of a reservoir for the substance to be injected, the device being adapted to effect either a connection between the outlet of the injection syringe and said connecting piece or between the syringe outlet and the connection of said reservoir, compressed-air lines provided for the purpose of pneumatically operating said pistons in said two pressure cylinders and bleed valves disposed in said compressed-air lines and adapted to be controlled electronically in such a manner that the pneumatically effected filling step can only be initiated with said three-way cock being in the position in which it connects the syringe outlet with the reservoir and that a subsequent injection step can only be effected with said three-way cock in a position in which it connects the syringe outlet with said connecting piece.

4,327,725

OSMOTIC DEVICE WITH HYDROGEL DRIVING MEMBER

Richard Cortese, San Jose, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

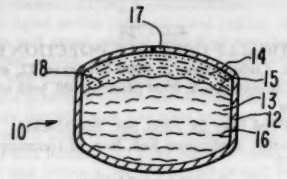
Filed Nov. 25, 1980, Ser. No. 210,176
Int. Cl.³ A61M 7/00
U.S. Cl. 128—260 40 Claims

1. An osmotic device for the controlled delivery of a beneficial agent to a fluid environment of use, comprising:

a. a wall formed of a semipermeable material permeable to the passage of an exterior aqueous fluid present in environment of use and substantially impermeable to the passage

of beneficial agent, the semipermeable wall surrounding and forming;

b. a compartment containing a layer of beneficial agent, that is insoluble to very soluble in the aqueous fluid and a layer of an expandable hydrogel; and,



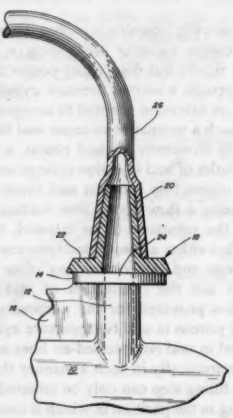
c. a passageway in the semipermeable wall communicating with the layer of beneficial agent in the compartment and with the exterior of the device.

4,327,726

CONNECTOR MEMBER FOR DISSIMILAR MATERIALS

Peter C. Kwong, Palatine, and Dean G. Laurin, Lake Zurich, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 15, 1979, Ser. No. 67,068
Int. Cl.³ B32B 5/22
U.S. Cl. 128—272 **14 Claims**



1. In a flexible, collapsible container comprising a container body which is made of a material selected from the group consisting of essentially polyolefin materials and polyvinyl chloride plastics, said container defining connected tubing which is made of a material selected from the group consisting of essentially polyolefin materials and polyvinyl chloride plastics, the tube material being of the other category of material from the material of the container body, and an apertured connector sealed to said container body and to said tubing to permit a fluid flow path to pass between the bore of said tubing and said container in aseptic manner, said connector being made of a plastic composition which comprises (a) from 50 to 75 percent by weight of an essentially polyolefin material which is sealingly compatible with the polyolefin material from which one of the container and tube is made, and (b) from 25 to 50 percent by weight of a flexible block copolymer of covalently bonded polyethylene terephthalate units and poly(1,4-butylene)oxide units.

4,327,727

COLLECTING BAG FOR ARTIFICIAL INTESTINAL OUTLETS

Jan Prahl, Rullstorf, and Franz Gelbenegger, Hamburg-Volksdorf, both of Fed. Rep. of Germany, assignors to Ipos Gesellschaft für integriert Prothesen-Entwicklung und orthopädietechnischen Service GmbH & Co., KG, Lüneburg, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,724
Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017989
Int. Cl.³ A61F 5/44
U.S. Cl. 128—283 **5 Claims**

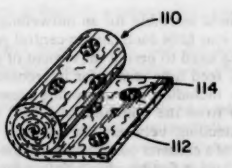
1. A collecting bag of the type adapted to be attached to the body of a wearer for receiving therein bodily discharge comprising: two sheets arranged in a generally overlapping relationship sealed together at the peripheral edges thereof, one of said sheets constituting a body-side sheet of said bag adapted to be located adjacent the body of a wearer when said bag is in use, said body-side sheet having an annular edge portion defining an opening therethrough; and an annular attachment member connected to said body-side sheet about said opening for adhesively affixing said bag to the body of a wearer; said annular attachment member defining an intake orifice through which bodily discharge may enter said bag, an annular generally planar pressure-sensitive adhesion surface facing outwardly of said bag surrounding said intake orifice adapted to be adhered to the body of a wearer, said planar adhesion surface being defined between a radially innermost annular edge and a radially outermost annular edge, and a remainder surface portion located on the opposite side of said annular attachment member inwardly of said bag and extending continuously between said innermost and outermost annular edge; said body-side sheet being connected with said annular attachment member with said annular edge portion in adhesive contact with said remainder surface portion; said annular edge portion extending to completely cover said remainder surface portion continuously from said innermost edge to said outermost edge so that the outer surface of said body-side sheet extends contiguously with said outermost edge along the entire length thereof.

4,327,728

CATAMENIAL DEVICE WITH AN ABSORBENT LAYER HAVING ADMIXTURE OF DISCRETE SUPERABSORBENT AND INTROFYING PARTICLES

Robert T. Elias, Downers Grove, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 954,152, Oct. 24, 1978, abandoned. This application Jun. 4, 1980, Ser. No. 153,709
Int. Cl.³ A61F 13/20, 13/16
U.S. Cl. 128—285 **23 Claims**



1. A catamenial device comprising a moisture permeable

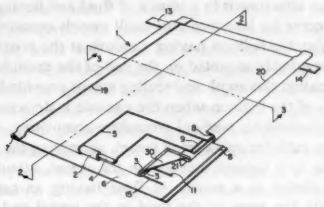
outer layer containing an absorbent layer, said absorbent layer including at least one discrete pocket therein, at least a portion of said pocket being moisture permeable, said pocket containing therewithin a uniform admixture of discrete particulate hydrocolloid material and discrete introfying particles which maintain the particles of hydrocolloid material in spaced relationship relative to one another.

4,327,729

LOW-DENSITY DISPOSABLE ABSORBENT BANDAGE HAVING LOW STRETCH, WET STRENGTH CENTER PLY TO PROVIDE IMPROVED PAD INTEGRITY IN USE

Lawrence W. King, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 27, 1977, Ser. No. 810,661
Int. Cl.³ A61F *13/16*
U.S. Cl. 128—287 **8 Claims**



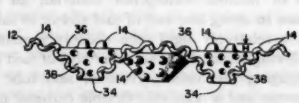
1. In a disposable absorbent bandage comprising a moisture-pervious topsheet for contacting the wearer's body, a moisture-absorbent pad for absorbing and retaining body exudates, and a moisture-impervious backsheet opposite the wearer contacting surface secured in superposed relation to one another, the improvement wherein said moisture absorbent pad is comprised primarily of relatively stiff, airlaid, high yield, substantially non-delignified wood pulp fibers constrained within an envelope of wet strength tissue paper, said moisture absorbent pad including at least one ply of wet strength tissue paper having a maximum dry stretch characteristic of about 30 percent, as measured at the point of rupture, located in a plane intermediate the outermost surfaces of said wet strength tissue envelope and surrounded on both sides by said high yield wood pulp fibers, said moisture absorbent pad exhibiting a maximum wet density of approximately 0.10 grams per cubic centimeter, as measured at a one percent saline simulated urine loading amounting to about three times the weight of the absorbent pad sample under an applied load of 12 grams per square centimeter, said moisture absorbent pad exhibiting improved absorptive capacity and integrity in use.

4,327,730

TEXTURED THERMOPLASTIC FILM AND PRODUCT MANUFACTURED THEREFROM

Eugene R. Sorensen, Springfield Township, Hamilton County, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 36,253, May 4, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 225,944
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—287 **7 Claims**



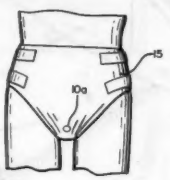
1. A disposable diaper comprising: a fluid permeable topsheet, said topsheet being a thermoplastic film having a plurality of perforations and a plurality of nubbles, said nubbles having a diameter of from about 0.0005 to about 0.011 inches; said nubbles being interposed between said perforations a fluid impermeable backsheet affixed to said topsheet; an absorbent means for absorbing liquids, said absorbent means being encased by said topsheet and said backsheet.

4,327,731

MOISTURE INDICATOR

Nelson B. Powell, 1369 Zurich Ter., Sunnyvale, Calif. 94087

Filed Jul. 7, 1980, Ser. No. 166,557
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—287 **12 Claims**



1. A disposable diaper including a moisture indicating system, said diaper including inner absorbent layers and an outer translucent moisture-impermeable layer, comprising:

a chromogen capable of producing a visible pigment upon entering into a specific chemical reaction;

enzyme means for effecting said specific chemical reaction with the chromogen when a substrate material in solution is present;

the substrate material, in dry form;

absorbent carrying medium supporting the chromogen, the enzyme means and the dry substrate material;

the absorbent carrying medium being in disc-like form and positioned just underneath the translucent, moisture-impermeable layer and against the outermost absorbent layer, with means for attaching the disc-like moisture indicating system to at least one of the adjacent layers,

whereby, in the presence of moisture the dry substrate becomes dissolved, causing the enzyme means to effect the specific chemical reaction, thereby yielding a pigment from the chromogen which is visible through the outer translucent layer.

4,327,732

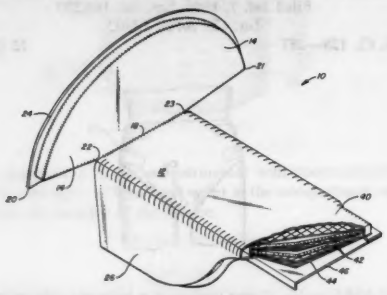
INCONTINENT PAD

Joel H. Thinnes, Three Oakes, Mich., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jul. 8, 1980, Ser. No. 166,923
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—290 R **3 Claims**

1. An incontinent pad adapted to be worn between the legs of a subject for protection purposes, comprising a member having a forward curved section and an attached rearward section formed as a strip-like member, the sections being adapted to merge along a transverse axis of fold, said sections then forming a paddle-like section at their axes of merger with the forward section then being formed as a sector-shaped section having a rearward portion starting at the axis of fold forming a main body section of strip-like shape extending outwardly therefrom with the forward section then forming a forward body section, the forward body section having its forward portion adapted to be folded close to the body of a wearer upon being folded from the merging axis with the main body section, the said main body section having a width at the axis of merger which substantially corresponds to that of the forward section at said axis of merger, the formed wider sections of the main body member being adapted to be turned upon an axis at substantially a right angle to the axis of merger with the forward section so that it may be turned inwardly

about its axis of fold so as to be adjacent the inner side of the left and right legs of a wearer, the said folded portion then being secured to the said inner side of the legs of the wearer to hold any moisture externally developed within the pad to the inner side adjacent to the legs of the wearer, a channel member formed upon the said main body member from its under side, a plurality of sandwiched moisture maintaining strips removably supported within said channel and adapted to contain any



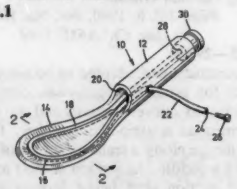
moisture developed therein from escaping, a channel covering sheet of moisture retaining character covering the removable strips within the said channel section and held to cover all of the removable strips therein, and means to fold the rear extended end of said supported body section about its rear end and that of the channel section so that it may be held against the body of the wearer with all of the moisture within the said removable strips confined therein.

4,327,733

CRYOENUCLEATION TOOL

Brenda L. Gallie, Toronto, Canada, assignor to Governing Council of the University of Toronto, Toronto, Canada

Filed Jan. 28, 1981, Ser. No. 229,235
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **6 Claims**



1. Apparatus for cryoenucleating a tumor of the eye comprising:

a spoon of thermally insulating material having a handle and a concave bowl and adapted to receive an eyeball,

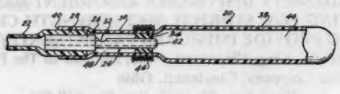
and a refrigerating loop supported on the concave side of the bowl and of a size adapted to substantially surround a tumor in said eyeball thereby to freeze it, means being provided to circulate refrigerant in passage means of said loop.

4,327,734

THERAPEUTIC METHOD OF USE FOR MINIATURE DETACHABLE BALLOON CATHETER

Robert I. White, Jr., 2615 Pot Spring Rd., Timonium, Md. 21093

Continuation of Ser. No. 6,028, Jan. 24, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,415
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—325 **31 Claims**



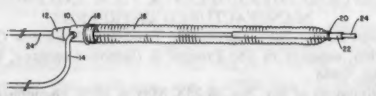
1. A therapeutic medical procedure utilizing a miniature balloon catheter of the type including a resilient cannula adapted for attachment to a source of fluid and having a small outer diameter for insertion into small vessels containing fluid and an inflatable balloon having a mouth at the proximal end thereof detachably mounted on the end of the cannula in fluid communication therewith and sealing means provided to close the mouth of the balloon when the cannula is detached therefrom, the therapeutic medical procedure comprising; inserting the balloon catheter into a small vessel, permitting the catheter to advance to a desired location in the vessel, attaching the balloon catheter to a source of fluid having an osmolarity substantially the same as the fluid in the vessel and being a contrast agent and inflating the balloon to the volume limits of the balloon with fluid from the fluid source through the cannula until the balloon is fixed in position in the vessel, and detaching the cannula from the balloon and removing the cannula from the vessel with the sealing means sealing the mouth of the inflated balloon and the fluid therein maintaining the balloon in inflated position for an extended period of time to create a vessel occlusion.

4,327,735

CATHETER ASSEMBLY

James Hampson, Lauderhill, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Oct. 22, 1980, Ser. No. 199,653
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—348 **3 Claims**



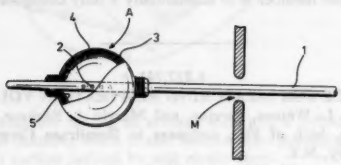
1. A catheter assembly comprising a longitudinally collapsible sleeve of flexible waterproof material, an introducer socket, means securing one end of said sleeve to said introducer socket, a relatively rigid tube slidably mounted in said sleeve, an O-ring secured to the other end of said sleeve and slidably engaging the outer surface of said tube in sealing relation thereto, and a relatively flexible catheter mounted to slide through said tube, sleeve and introducer socket, whereby said catheter may be moved into position in the body of a patient, the tube may be withdrawn from the sleeve and the O-ring thereupon sealingly engages the sleeve with the catheter.

4,327,736

BALLOON CATHETER

Kanji Inoue, 2-22, Asahi-cho, Kohchi-shi, Kohchi-ken, Japan

Filed Nov. 20, 1979, Ser. No. 96,143
Int. Cl.³ A61M 25/00
U.S. Cl. 128—349 B 1 Claim



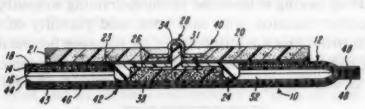
1. A balloon catheter comprising a flexible fine tube having a closed apertured end portion; and a composite balloon tube comprising outer and inner expandable rubber tubes and an intermediate cloth bag limiting the expansion of said outer and inner tubes, the opposite ends of said balloon tube being affixed to the end portions of said flexible fine tube, a relatively wide rubber band disposed around and at about the middle part of said composite balloon tube to initially restrict the expansion of said composite balloon at about the stenosis of a body cavity upon inflation of said composite balloon tube, and a relatively narrow rubber band disposed around a portion of said composite balloon tube outside of said stenosis to initially restrict the expansion of said composite balloon outside of said stenosis, so that upon insertion of the composite balloon tube and inflation thereof, said tube will become inflated first within said stenosis, then outside of said stenosis, and finally between both the inside and outside of said stenosis to enlarge the same.

4,327,737

MEDICAL ELECTRODE ASSEMBLY

Roman Szpur, 2685 Culver Ave., Dayton, Ohio 45429

Filed May 15, 1980, Ser. No. 150,207
Int. Cl.³ A61B 5/04
U.S. Cl. 128—640 10 Claims



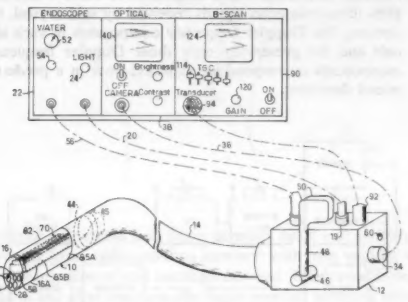
1. A medical electrode assembly comprising a flexible carrier sheet having an adhesive releasing outer surface, an inner coating of heat sealable plastics material forming the inner surface of said carrier sheet, a retaining pad of flexible sheet material having a coating of adhesive on a surface thereof attached to said adhesive releasing outer surface of said carrier sheet, said carrier sheet having an opening covered by said retaining pad, electrical conducting means secured to said retaining pad and projecting through said opening, a flexible bottom cover sheet, an inner coating of heat sealable plastics material forming the inner surface of said bottom cover sheet, and said inner coating on said carrier sheet being heat-sealed to said inner coating on said bottom cover sheet in only an area surrounding said retaining pad and being unattached within said area to form an air-tight chamber larger than said retaining pad and enclosing said electrical conducting means.

4,327,738

ENDOSCOPIC METHOD & APPARATUS INCLUDING ULTRASONIC B-SCAN IMAGING

Philip S. Green, 60 MacBain Ave.; Dilip G. Saraf, 98 Euclid Ave., both of Atherton, Calif. 94025, and James F. Havlice, 348 Toyon Ave., Los Altos, Calif. 94022

Filed Oct. 19, 1979, Ser. No. 86,354
Int. Cl.³ A61B 10/00
U.S. Cl. 128—660 12 Claims



1. An endoscopic probe for use in a system for visually examining and for ultrasonically imaging internal body parts, said probe comprising,

a substantially cylindrical shaped elongated housing having forward and rear ends at the respective distal and proximal ends thereof and a longitudinal axis, said housing including a distal end member at the forward end thereof,

means forming a plurality of longitudinally extending apertures through said distal end member at a first substantially semicylindrical portion of said housing for use in optically imaging internal body parts, and

a longitudinally extending rectilinear ultrasonic transducer array including a plurality of adjacent transducer elements within the probe housing, said transducer array being positioned rearwardly the forward end of of said distal end member at a second substantially semicylindrical portion of said housing substantially opposite said first semicylindrical portion for use in ultrasonically imaging internal body parts.

4,327,739

NONINVASIVE MEASUREMENT OF BLOOD FLOW RATE UTILIZING ULTRASOUND

Horst Chmiel, Paracelsusstrasse 14, D-7250 Leonberg, and Rudolf Mauser, Haussmannstrasse 146 B, D-7000 Stuttgart 1, both of Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,103
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911258
Int. Cl.³ A61B 10/00
U.S. Cl. 128—663 12 Claims

1. Apparatus for the noninvasive measurement of the blood flow rate in the smallest vessels of a blood vessel system below the skin of a subject and for detection of erythrocyte aggregations in those vessels, utilizing ultrasonic signals, said apparatus comprising:

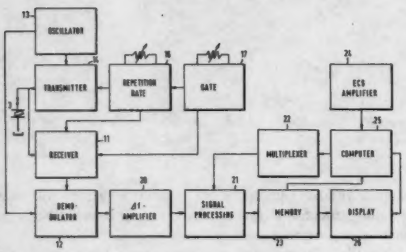
(a) electroacoustic means for transmitting ultrasonic signals and receiving echoes thereof, said means including a transmitting/receiving crystal;

(b) support means supporting said crystal and arranged to hold said crystal in proximity to the skin of a subject in the region of vessels to be examined and in acoustic signal communication with the skin of the subject, said support means being arranged to adjustably orient said crystal relative to the skin for ultrasonic transmission along an

axis forming an angle of between 15° and 30° to the skin surface;

(c) first switching means connected for transmitting exciting signals to said crystal for producing ultrasonic energy in the form of successive pulses containing oscillations at a frequency of at least 20 MHz, for measurement of the blood flow rate in such smallest vessels, and spike pulses of a width of the order of 20 ns for detecting erythrocyte aggregations;

(d) second switching means connected to receive and amplify ultrasonic echo signals received by said crystal, for deriving the Doppler frequency components in such signals and for preserving only those Doppler frequency components corresponding to blood flow in a predetermined direction;



(e) comparison means connected for comparing the preserved Doppler frequency components with a selected frequency value corresponding to the maximum flow rate in the smallest vessels under examination; and

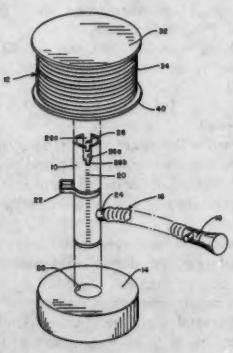
(f) control means connected to isolate those received signal Doppler frequency components which are received within a predetermined time interval after emission of each ultrasonic pulse by said crystal, corresponding to a predetermined depth range below the skin of the subject and a predetermined measuring volume which is independent of the pulse repetition rate, said control means thereby providing a depth window for the received signals.

4,327,740

INCENTIVE SPIROMETER

Clyde Shuman, 25 Crescent Rd., Neffs, Pa. 18049

Filed Nov. 19, 1979, Ser. No. 95,374
Int. Cl.³ A61B 5/08
U.S. Cl. 128—728 **16 Claims**



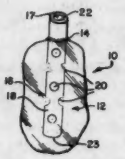
1. A spirometer assembly comprising an elongate support; a hollow, collapsible, substantially fluid-tight chamber; means for mounting the chamber on the support in surrounding relationship thereto; means for biasing the collapsible chamber toward an open position when the collapsible chamber is mounted on the support; and means for providing fluid communication between the interior of the collapsible chamber and a patient when the collapsible chamber is biased toward an open position and between the patient and ambient when the collapsible member is in substantially a fully collapsed condition.

4,327,741

DEVICE FOR MEASURING RESPIRATION VOLUME

Herman L. Watson, Perrine, and Marvin A. Sackner, Miami Beach, both of Fla., assignors to Respitrace Corporation, Ardsley, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,615
Int. Cl.³ A61B 5/08
U.S. Cl. 128—728 **9 Claims**



1. A device for measuring a predetermined respiratory volume comprising:

an elongate, air-tight, flexible bag of said predetermined volume, said bag being closed at one end and open at the other end; and

an elongate substantially rigid tubular member defining a bore, a portion of said tubular member extending into said bag through said open end thereof, the remaining portion of said tubular member extending outside the bag, the portion of the tubular member extending inside the bag occupying a major portion of the length of the bag, said bag being secured at its open end to said tubular member and forming an air-tight seal between said bag and said tubular member, said portion of said tubular member extending into said bag having a plurality of apertures distributed along the length thereof in communication with said bore, the portion of said tubular member outside said bag having at least one opening defining a mouthpiece in communication with said bore, said plurality of apertures providing a multiplicity of air passages between said bag and said mouthpiece for preventing the entrapment of air in said bag upon inhalation through said mouthpiece.

4,327,742

APPARATUS FOR DETECTING TEMPERATURE VARIATIONS OVER SELECTED REGIONS OF LIVING TISSUE, AND METHOD THEREOF

Phillip H. Meyers, New Orleans, La., and Franklin R. Greene, Flushing, N.Y., assignors to E-Z-EM Company, Inc., Westbury, N.Y.

Filed Oct. 25, 1979, Ser. No. 88,159
Int. Cl.³ A61B 5/00
U.S. Cl. 128—736 **9 Claims**

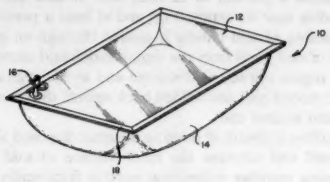
1. A device for detecting temperature variations over selected regions of living tissue comprising:

an inflatable chamber having first and second oppossed walls,

said first wall comprising an elastic sheet which carries temperature-responsive liquid crystals,

said second wall comprising a sheet of transparent material,

said second wall being substantially rigid and non-elastic relative to said elastic sheet of said first wall,



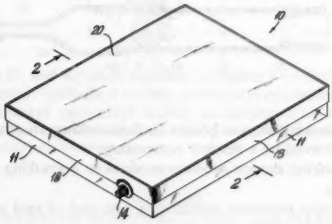
said chamber having an inflated state and a deflated state, said chamber when in said inflated state providing a convex surface defined by said elastic sheet.

4,327,743

DETECTION OF TEMPERATURE VARIATIONS OVER REGIONS OF LIVING TISSUE

Seymour Katz, Glen Cove, N.Y., assignor to E-Z-EM Company, Inc., Westbury, N.Y.

Filed Nov. 21, 1980, Ser. No. 209,128
Int. Cl.³ A61B 5/00
U.S. Cl. 128—736 **7 Claims**



1. A device for presenting variation in skin temperature comprising:

a first elastic flexible film carring temperature responsive liquid crystals,

a second elastic flexible film deployed adjacent said first film to provide a dual film structure,

said first and second films having a different elastic modulus, said first and second films being attached to one another solely along the periphery thereof, said films having an air space therebetween, and

pressure means applied to one of the outer surfaces of said dual film structure, when said structure is applied to the patient, to evacuate the air in said air space between said films and to assure conformance of both of said films to the tissue being investigated.

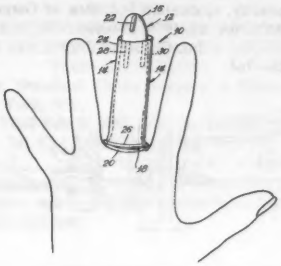
4,327,744

APPARATUS FOR THE SELF-COLLECTION OF CERVICAL CELL SPECIMENS

Louise W. Smith, 400 Swedesford Rd., Gwynedd Valley, Pa. 19437

Filed Jun. 23, 1980, Ser. No. 161,669
Int. Cl.³ A61B 17/42
U.S. Cl. 128—759 **8 Claims**

1. A kit having component parts capable of being assembled and inserted into the vagina for the gathering of cervical cell specimens, said kit comprising the combination of an elongated, tubular finger member formed of a thin, elastically resilient material, closed at its distal end and open at its proximate end and adapted to accommodate and resiliently grip a person's finger, said finger member carrying adjacent its distal end a raised wiping element; a tubular sleeve member open at its ends and having an inside dimension larger than the exterior dimension of said finger member and adapted to be fitted over and slidably receive therewithin the distal end and wiping element of said finger member, said sleeve member being shorter in length than said finger member, whereby said sleeve



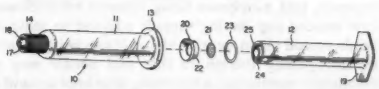
member may shield said finger member distal end and wiping element from contamination contact with the vaginal wall during insertion of said members into and withdrawal from the vagina and after insertion the finger member scraping element may be extended beyond the distal end of said sleeve member to obtain the desired cervical specimens.

4,327,745

BLOOD SAMPLING DEVICE

George W. Ford, Jr., Sandy, Utah, assignor to The Deseret Company, Sandy, Utah

Filed Sep. 2, 1980, Ser. No. 182,874
Int. Cl.³ A61B 5/00
U.S. Cl. 128—765 **1 Claim**



1. A syringe device for drawing an arterial blood sample including a hollow barrel open at one end and having a hypodermic needle removably mounted at the other end, a plunger assembly within the open end of said barrel for slidable reciprocating movement therein,

said plunger assembly including a hollow piston with a first annular fitting within said hollow piston having an external diameter smaller than said hollow piston and of a dimension to allow it to be fixedly mounted within the distal end of said hollow piston,

an integral skirt of a lesser diameter dependent therefrom,

a second annular fitting comprising a cylindrical upper section having an internal diameter to cooperate with and receive said dependent integral skirt for a force fit therebetween and of an external diameter to form a force fit within said hollow piston,

said second annular fitting also including an inner shoulder and an outer shoulder, said outer shoulder being adapted to receive a sealing ring for sealing the space between the hollow barrel and piston when said hollow barrel and second annular fitting are assembled,

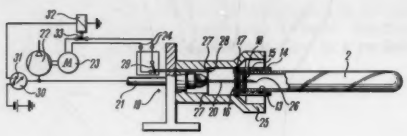
said internal shoulder cooperating with the dependent skirt of said first annular fitting for supporting and fixedly maintaining a membrane element therebetween,

said membrane element being pervious to the passage of air therethrough but impervious to the passage of liquid after being wetted.

4,327,746
BLOOD EXTRACTION DEVICE

William W. Feaster, Monte Carlo, Monaco, assignor to C. A. Greiner & Sohne GmbH & Co. KG, Nurtigen, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,709
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908817; Nov. 19, 1979, 2946660
Int. Cl.³ A61B 5/14
U.S. Cl. 128—764 6 Claims



1. A blood extraction device, comprising:

a hollow, cylindrical receptacle, said receptacle being provided at one end with a double ended hollow needle passing therethrough, one end of said needle extending into the hollow cylindrical space of said receptacle and the other end of said hollow needle being located outside of said receptacle, the opposite end of said hollow, cylindrical receptacle being open;

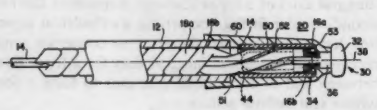
a blood sample tube being closed at one end with a seal which may be penetrated by a needle, said sealed end of said blood sample tube being slidably inserted into the hollow cylindrical space of said receptacle so that said one end of said needle which extends into the space of said receptacle penetrates said seal to create a connection between the interior of said blood sample tube and the other end of said needle; and

said seal of said blood sample tube being comprised of a flat sealing membrane of a material that may be penetrated by one end of said needle when inserted into said cylindrical receptacle, said membrane being retained by a releasably screw attaced cap having threads adapted to mate with threads on said blood sample tube, said cap being provided with an opening therein so that said needle may pass through said membrane, a rim being provided around said opening in said cap, said sealing membrane being retained by said rim to form said seal.

4,327,747
TERMINAL ASSEMBLY FOR A CARBON FIBER IMPLANTABLE LEAD

Philip Gold, Pompano Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Sep. 22, 1980, Ser. No. 189,125
Int. Cl.³ A61N 1/04
U.S. Cl. 128—784 6 Claims



1. A terminal assembly for an implantable carbon fiber lead having an outer cover disposed about a stylet tube and one or more carbon fiber bundles, each of said bundles having an insulating outer sheath and having an exposed carbon fiber tip at the end to be coupled, comprising:

A. a terminal member having a hollow cylindrical portion, the first end of said cylindrical portion being disposed about and substantially coaxial with one end of said stylet tube, said one end being at the coupling end of said lead, and the second end of said cylindrical portion being disposed about a portion of said stylet tube near said one end and about portions of said carbon fiber bundles, said second end having one or more ports in its lateral surface, wherein a portion of at least one of said carbon fiber bundles near its exposed tip and at least a portion of the sheathing of said bundle is guided through an associated one of said ports from the region inside said second end to the region outside said second end to the region outside said second end, and folded back against the outer surface of said second end,

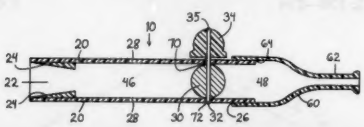
B. a hollow cylindrical housing member disposed about said second end wherein the inner surface of said terminal housing member cylindrical portion frictionally engages the exposed tips and associated sheathing of the carbon fiber bundles which extend through said ports, and

C. means for securing said housing member to said terminal member.

4,327,748
SMOKING DEVICE HOLDER

George F. Divis, 109 W. Chicago, Algonquin, Ill. 60102

Filed Jan. 19, 1981, Ser. No. 226,064
Int. Cl.³ A24F 13/02, 13/04
U.S. Cl. 131—187 10 Claims



1. A smoking device holder for controlling an amount of smoke received by a smoker comprising:

a. a smoking device receiver secured to a smoking mouthpiece;

b. a device receiving means at a first end of said smoking device receiver;

c. a device holding means in said first end;

d. a mouthpiece receiving end at a second end of said smoking device receiver secured to and mating with said mouthpiece;

e. a valve means between said first end and said second end;

f. a mixing chamber for the mixing of smoke and air within said smoking device receiver and between said first end and said valve means;

g. an adjusting means for said valve means;

h. at least one transverse air means in said smoking device receiver between said valve means and said first end;

i. said air means communicating with said mixing chamber; and

j. said valve means being capable of partially or completely closing said smoking device receiver.

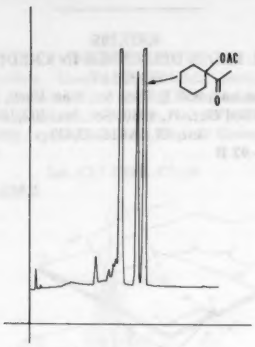
4,327,749
ALKYL ESTERS OF 1-ALKANOYL CYCLOALKANOLS, PROCESS FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Ronald P. Schreck, Old Bridge, N.J.; Kenneth K. Light, North Ogden, Utah; John B. Hall, Rumson, N.J.; Frederick L. Schmitt, Holmdel, N.J.; Manfred H. Vock, Locust, N.J.; William L. Schreiber, Jackson, N.J.; Joaquin F. Vinals, Red Bank, N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

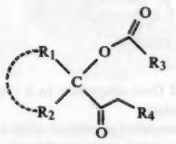
Filed Mar. 25, 1980, Ser. No. 133,828
Int. Cl.³ A24B 15/30
U.S. Cl. 131—276 3 Claims

1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of intimately admixing with smoking tobacco an aroma or taste augmenting or

enhancing quantity of at least one compound having the generic structure:



GLC PROFILE FOR EXAMPLE I.



wherein R_1 and R_2 taken together complete a cycloalkyl moiety, a methyl cycloalkyl moiety, a dimethyl cycloalkyl moiety or a trimethyl cycloalkyl moiety containing 5 or 6 carbon atoms in the ring; wherein R_3 is C_1–C_3 lower alkyl and wherein R_4 is methyl or hydrogen.

4,327,750

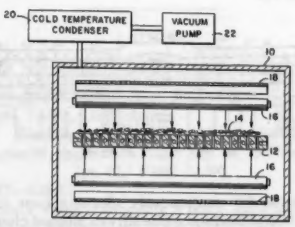
APPARATUS FOR INCREASING THE FILLING CAPACITY OF TOBACCO

Eugene Glock, Richmond, Va., assignor to American Brands, Inc., New York, N.Y.

Division of Ser. No. 931,624, Aug. 7, 1978, Pat. No. 4,271,852, which is a continuation-in-part of Ser. No. 913,246, Jun. 6, 1978, Pat. No. 4,161,953, which is a continuation of Ser. No. 744,042, Nov. 22, 1976, abandoned, which is a continuation of Ser. No. 628,912, Nov. 5, 1975, abandoned, which is a continuation of Ser. No. 40,726, May 20, 1970, abandoned. This application Jun. 8, 1981, Ser. No. 271,115

Int. Cl.³ A24F *0/00*

U.S. Cl. 131—292 **5 Claims**



1. An apparatus for expanding tobacco tissue which comprises, in combination, a vessel having at least one infrared radiation transparent shelf disposed therein, said vessel being in communication with a cold temperature condenser and said cold temperature condenser being in communication with a vacuum pump, water expanded tobacco disposed on said shelf, and infrared radiation elements disposed relative the said shelf to effect heating of the water expanded tobacco supported thereon.

4,327,751

HAIR BLEACHING COMPOSITION CONTAINING SOLID POLYOLEFIN POLYMER AND METHOD FOR HAIR BLEACHING

Evelyn Evans, Stamford, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Feb. 5, 1980, Ser. No. 118,816

Int. Cl.³ A45D *7/04*; A61K *7/135*

U.S. Cl. 132—7 **10 Claims**

1. A composition for lightening hair comprising an alkaline bleaching system and an effective amount of a finely divided solid polyolefin polymer.

4,327,752

ROTARY IGNITION SYSTEM FOR A CATALYTICALLY HEATED CURLING DEVICE

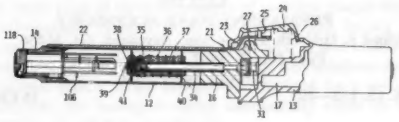
Gerhard Hickel, Goissumstadt Klee, Fed. Rep. of Germany, assignor to Braun, Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Jun. 22, 1980, Ser. No. 167,631

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948857; Dec. 5, 1979, 7934175[U]

Int. Cl.³ A45D *2/24*

U.S. Cl. 132—37 R **14 Claims**



1. In a curling device having a tubular body defining a heating chamber therein, and having first and second ends and a hair winding portion disposed between the first and second ends and surrounding the heating chamber, heating means including a catalyst means disposed in the heating chamber, a housing member proximate the tubular body including fuel supply means for storing a fuel in a liquid state, and aspirating means coupled between the fuel supply means and the heating chamber for vaporizing the fuel and for mixing the vaporized fuel with air and for supplying a vaporized fuel/air mixture to said catalyst means, the improvement comprising:

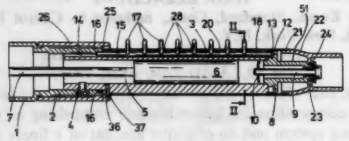
self-contained ignition means mounted in the first end of the tubular body proximate the catalyst means for initiating oxidation of the vaporized fuel/air mixture in the presence of the catalyst means including a manually rotatable member mounted in said ignition means and having an axis of rotation substantially parallel or concomitant to the longitudinal axis of the tubular body, a friction wheel mounted in said ignition means having an axis of rotation substantially perpendicular to the longitudinal axis of the tubular body, flint means mounted in said ignition means and including a flint biased against said friction wheel wherein a predetermined rotation of said friction wheel against said flint causes a spark, and indexing means disposed parallel or coextensive with the longitudinal axis of the tubular body and connecting said rotatable member to said friction wheel whereby said indexing means translates the rotary motion of said rotatable member to a rotational movement of said friction wheel.

4,327,753

HAIR-CURLING IMPLEMENT

Ernst Bertschi, Winterthur, Switzerland, assignor to ICOMAG Trust Reg., Vaduz, Liechtenstein

Filed Oct. 30, 1980, Ser. No. 202,235
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2944050
Int. Cl.³ A45D 2/00
U.S. Cl. 132—40 10 Claims



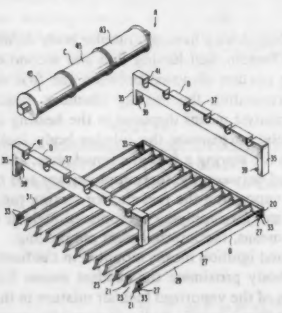
1. A hair curler comprising:
a handle;
a tubular body mounted on said handle and extending therefrom while having an axis and being adapted to receive a heating element;
a plurality of combs formed with respective pivot rods disposed about the periphery of said body and rotatable relative thereto, each of said combs having an array of teeth spaced therealong; and
a sleeve surrounding said body and said rods and formed with windows enabling said teeth to be erected through said windows upon relative rotation of said sleeve and said body in one sense and to be retracted to lie between said sleeve and said body upon relative rotation of said sleeve and said body in an opposite sense.

4,327,754

PERMANENT WAVE ACCESSORY

Michael S. Hildreth, 9 Rose Ave., Savannah, Ga. 31406

Filed Nov. 7, 1980, Ser. No. 204,962
Int. Cl.³ A45D 2/00
U.S. Cl. 132—40 16 Claims



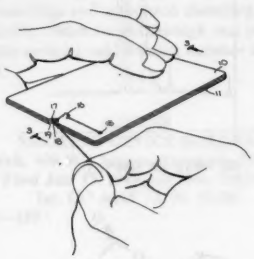
1. A permanent wave accessory including a base implement, a pair of elongated side frame means, and a plurality of roller means, said base implement including an elongated side member having a plurality of elongated and substantially parallel teeth interconnected at one end thereof to said side member, said teeth defining therebetween a plurality of channels for pre-sectioning of hair, said channels opening at the end of said teeth opposite from the end of interconnection thereof to said side member for insertion through the hair in pre-sectioning of hair therebetween, said side frame means being mounted on said base implement in a substantially parallel spaced apart relation to each other as respectively extending transversely of said channels of said base implement and including attaching means for supporting said roller means thereon as individually extendant substantially along one of said channels of said base implement for receiving hair thereof as pre-sectioned through such one said channels.

4,327,755

DENTAL FLOSS DISPENSER IN CREDIT CARD FORMAT

Robert A. Endelson, 330 E. 79th St., New York, N.Y. 10021

Filed Oct. 31, 1980, Ser. No. 202,734
Int. Cl.³ A61C 15/00
U.S. Cl. 132—92 R 10 Claims



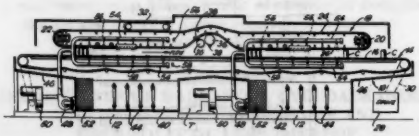
1. A thin flat dental floss dispenser in a credit card format, said dispenser comprising:
A. a rectangular base panel provided with a peripheral ridge to define a shallow well, said panel having a well aperture therein and an edge notch;
B. a flattened unsupported supply coil of dental floss nested in the well, and having a thickness substantially equal to the depth of the well, the leading end of the coil passing out of the aperture;
C. a blade adjacent said notch and anchored in said well, said blade having a cutting edge exposed by said notch, and
D. matching face panel marginally bonded to said ridge to encapsulate said coil, said base panel and said face panel having a combined thickness and rectangular dimensions similar to those of a typical credit card whereby the dispenser may be conveniently stored in a wallet or otherwise inconspicuously carried on a person.

4,327,756

CLEANING MACHINE

Robert E. Rath, Morristown, N.J., assignor to Metalwash Machinery Corp., Elizabeth, N.J.

Filed May 19, 1980, Ser. No. 151,006
Int. Cl.³ B08B 3/02
U.S. Cl. 134—72 12 Claims



1. Apparatus for continuously cleaning cans or the like comprising in combination a plurality of aligned chemical-containing fluid cleaning zones for cleaning said cans, a transport conveyor having an upper course upon which the cans to be cleaned are carried continuously through said cleaning zones, an elongate overhead hold down conveyor extending longitudinally through substantially all of said cleaning zones and constructed and arranged to co-act with said transport conveyor to prevent said cans from tilting or tipping during passage of the cans through said cleaning zones, and blow off

means adjacent said hold down conveyor for retarding deterioration of said hold down conveyor resulting from contact with said chemical-containing fluid.

4,327,757

CONTROL VALVE

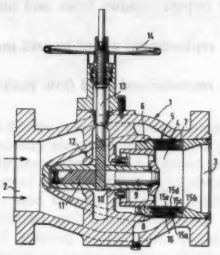
Henri H. Weevers, Gouda, Netherlands, assignor to Machinefabriek Mokveld B.V., Gouda, Netherlands

Filed Jul. 11, 1980, Ser. No. 167,476

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929389

Int. Cl.³ F16K *47/14*

U.S. Cl. 137—625.3 5 Claims



1. A control valve for regulating the pressure of a fluid flow, comprising valve housing means having an inlet port and an outlet port, flow passage means operatively interconnecting said inlet and outlet ports, flow impedance means operatively located in said flow passage means, valve closure means operatively arranged in said valve housing means for cooperation with said flow impedance means for opening and closing said flow passage means, said flow impedance means comprising a plurality of hollow cylindrical sleeves nested one in the other in a liquid-tight manner, said sleeves (**15**) comprising a plurality of circumferential grooves (**19**), pairs of through-bores (**20**) and pairs of blind bores (**18**) arranged in alternating succession along the respective circumferential groove, each circumferential groove operatively interconnecting the through-bores and blind bores arranged alongside the respective groove, said sleeves being arranged relative to one another in such positions that the through-bores in one sleeve register at least partially with the blind bores in the next adjacent sleeve so that fluids flowing into the blind bores forming a pair collide with each other in the groove to thereby flow apart again in opposite directions in the respective groove on both sides of the pair of blind bores (**18**) for further colliding between the through-bores of the next adjacent pair of through bores with fluid flows coming from adjacent pairs of blind bores (**18**).

4,327,758

PAIR OF HARD MATERIAL PLAQUES FOR A HOT AND COLD WATER MIXER VALVE

Joachim Uhlmann, Leonberg, Fed. Rep. of Germany, assignor to Gevipi AG, Vaduz, Liechtenstein

Filed Jun. 30, 1980, Ser. No. 164,817

Claims priority, application Italy, Jul. 16, 1979, 44810 A/79

Int. Cl.³ F16K *11/00*

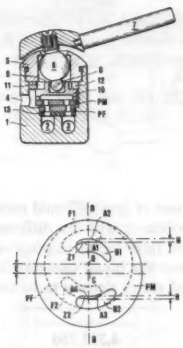
U.S. Cl. 137—625.17 5 Claims

1. In a mixer valve comprising a body, inlet unions for hot and cold water, an outlet union for mixed water, a seat for a hard material plaque in said body, and control means intended to be operatively connected to a second hard material plaque for displacing the same rotatively around a center and linearly along a diameter of said control means in view of regulating the quantity and the mixing ratio of water passing from said inlet unions to said outlet unions,

a pair of hard material plaques comprising:

a first plaque intended to be mounted stationary in said seat of the valve body, said first plaque having a center intended to coincide substantially with said center of the control means, and having a first and a second windows, intended to sealingly communicate with said inlet unions, each of said first and second windows having an inner edge, an outer edge and union sections comprising said inner and outer edges;

a second plaque intended to be superposed on and in sliding contact with said first plaque and to be operatively connected to said control means, said second plaque having a first and a second windows, intended each to cooperate with one of the windows of said first plaque, each of said first and second windows having an inner edge, an outer edge and union sections connecting said inner and outer edges;



said inner edge of the first window of said first plaque being substantially defined by a first circular arc having its center of curvature substantially located in said center of the first plaque, said outer edge of the first window of the second plaque being substantially defined by a second circular arc having a radius substantially equal to the radius of said first circular arc;

said outer edge of the second window of said first plaque being substantially defined by a third circular arc having its center of curvature substantially located in said center of the first plaque, and said inner edge of the second window of said second plaque being substantially defined by a fourth circular arc having a radius substantially equal to the radius of said third circular arc and having its center of curvature substantially coincident with the center of curvature of said second circular arc.

4,327,759

SLURRY PRODUCING APPARATUS

Andrew D. Millis, Hampton, England, assignor to Wimpey Laboratories Limited, London, England

Filed Aug. 14, 1980, Ser. No. 178,020

Claims priority, application United Kingdom, Aug. 24, 1979, 29559/79

Int. Cl.³ G05D *11/13*

U.S. Cl. 137—3 7 Claims

7. A method for producing a slurry comprising a step of:

providing a slurry reservoir with a circulating closed circuit into which particulate and liquid materials can be added;

supplying particulate material at a predetermined rate and generating a particulate flow rate signal indicative thereof;

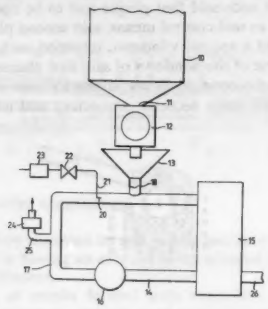
measuring the density of slurry within the closed circuit and generating a difference signal representing the difference between actual slurry density, as measured, and a desired slurry density;

computing a desired rate of flow for the introduction of liquid material into the closed circuit as a function of the

particulate flow rate signal and said difference signal and generating a desired rate of flow signal indicative thereof;

measuring the actual rate of flow of liquid into the closed circuit;

comparing the actual rate of flow of liquid material with said desired rate of flow and generating a signal indicative of the difference therebetween;



controlling the rate of flow of liquid material into the closed circuit in accordance with the difference and altering the desired rate of flow signal responsive to said difference signal whenever the liquid material flow rate is not causing the desired slurry density to be established.

4,327,760

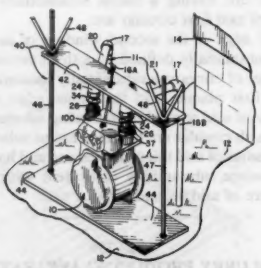
NON-INTERRUPTING GAS METER EXCHANGE SYSTEM

James W. Lancaster, Rte. 2, Box 520, Sheridan, Ark. 72150

Filed Jul. 11, 1980, Ser. No. 167,406

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—15 **8 Claims**



6. A method of removing and replacing a gas meter coupled to a meter loop terminals with conventional coupling means without interrupting customer service, said method comprising the steps of:

temporarily securing the meter to be removed relative to the meter loop to which the meter has already been connected independently of said coupling means;

providing a fluid pathway for bypassing said meter by sealably enclosing a volume about said meter loop terminals in fluid flow communication therewith;

purging air from said fluid bypass pathway volume prior to disconnecting said meter whereby to fill said volume with gas;

disconnecting said meter to be replaced from said meter loop terminals;

bridging said meter loop terminals with a bypass conduit to permit removal of said enclosing volume and said meter to be replaced without interrupting gas flow through said meter loop;

removing said fluid pathway bypass volume;

removing said meter to be replaced and substituting a replacement meter;

reestablishing a fluid flow pathway for bypassing said replacement meter by reenclosing a volume about said meter loop terminals;

purging air from the reestablished fluid flow pathway volume and from said replacement meter; said purging step including the steps of venting said bypass conduit to introduce gas into said reestablished volume and inserting a purge plug connected in fluid flow communication with said bypass conduit into a meter outlet to purge same;

removing said bypass conduit from said meter loop terminals;

attaching said replacement meter to said meter loop terminals; and,

removing said reestablished fluid flow pathway volume.

4,327,761

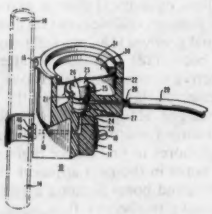
THERMOSTATIC SELF-POWERED DRAIN VALVE

Russell S. Shelton, 9 Park Ave., Flanders, N.J. 07836

Filed Aug. 4, 1980, Ser. No. 175,123

Int. Cl.³ E03B *7/12*; F16L *55/00*

U.S. Cl. 137—62 **5 Claims**



5. A thermally sensitive hydraulic valve comprising a body having a longitudinal cavity therein and three ports opening into said cavity.

a valve core slideably retained within said cavity and compliantly sealed to the walls of said cavity to form a piston therein,

a protuberance extending from one end of said valve core,

said protuberance aligned to extend into a first of said ports and compliantly sealed thereto to close the coupling from said first port to a second of said ports,

said protuberance having a transverse cross-sectional area that is small with respect to the transverse cross-sectional area of said piston,

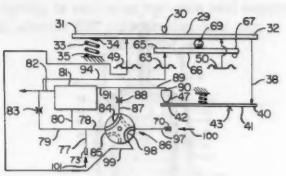
a bimetal disc having a normally concave surface extending transversely across the third port of said cavity and bearing upon the other end of said valve core to urge said protuberance into said first port,

said bimetal disc adapted to become convex when the temperature thereof passes through a predetermined temperature thereby opening the compliant seal of said first port a first amount to allow a flow of fluid to said piston to open said first port a further amount.

4,327,762
CONTROL DEVICE AND METHOD OF MAKING THE SAME

Douglas R. Scott, and Larry V. Price, both of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 39,792, May 17, 1979, Pat. No. 4,290,441. This application Aug. 8, 1980, Ser. No. 176,453
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **5 Claims**

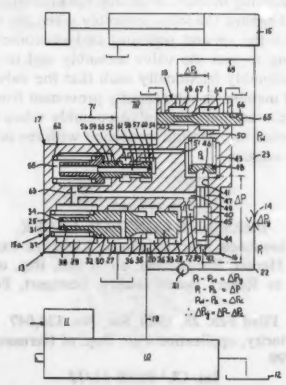


1. In a control device having a housing means provided with a main lever pivotally mounted thereto by a pivot means and being operatively associated with a flapper to move the same relative to a leakport means in relation to pivotal movement of said main lever, said device having a feedback diaphragm operatively associated with a feedback lever that is pivotally mounted to said housing means and operatively associated with said main lever to cause pivoting thereof upon pivoting movement of said feedback lever by said feedback diaphragm, the improvement wherein said control device has means for selectively changing said device to be either direct acting or reverse acting by changing the position of said feedback lever and said flapper and without changing the position of said feedback diaphragm and said leakport means, said means for changing said device comprising two different pivotally mounted position means in said housing means for said flapper and said feedback lever to effect the changing of said control device between said direct acting condition thereof and said reverse acting condition thereof.

4,327,763
DUAL CONTROL INPUT FLOW CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 111,194, Jan. 11, 1980. This application Nov. 28, 1980, Ser. No. 210,518
Int. Cl.³ F15B *13/04*
U.S. Cl. 137—117 **11 Claims**

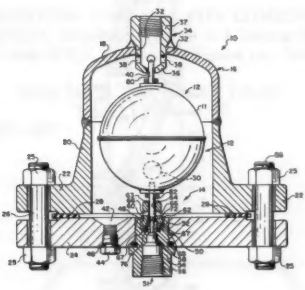


1. A valve assembly comprising a housing having an inlet chamber connected to a pump and to a device supplied with pressure fluid, a bypass chamber connected to fluid exhaust means, control orifice means interposed between said inlet chamber and said device supplied with pressure fluid, first valve means having fluid throttling means between said inlet chamber and said bypass chamber controllable by a pilot valve means and operable to throttle fluid flow from said inlet chamber to said bypass chamber to maintain a constant pressure differential at a preselected constant level across said pilot valve means and to maintain a constant pressure differential across said control orifice means, and second valve means having means operable through said first valve means to vary the level of said constant pressure differential across said control orifice means while said pressure differential across said pilot valve means remains constant at said constant predetermined level.

4,327,764
FLOAT VALVE ASSEMBLY FOR A LIQUID DRAIN TRAP

Richard Biederman, Kensington, and Ronald A. Zurawski, Laurel, both of Md., assignors to Superpressure, Inc., Silver Spring, Md.

Filed May 21, 1980, Ser. No. 152,041
Int. Cl.³ F16K *31/22*
U.S. Cl. 137—192 **11 Claims**



1. A float valve assembly in a liquid drain trap forming part of a high pressure liquid and gas separating apparatus, said drain trap including a housing having an upper orifice and a lower liquid outlet orifice axially aligned with said upper orifice, and said float valve assembly including a float, upper stem-forming means extending from said float, lower stem-forming means extending from said float and coaxial with said upper stem-forming means, said stem-forming means being fixed relative to said float, said upper and lower stem-forming means being received, respectively, in said upper and lower orifices which function not only as orifices for the ingress and egress of fluids from the drain trap but also as alignment means for maintaining said stem-forming means in generally vertical alignment, and a valve in said lower orifice formed between an upper valve seat associated with and movable with said lower stem-forming means and a lower valve seat situated within said lower orifice, the vertical alignment of said stem forming means facilitating positive vertical seating and unseating of said upper valve seat on said lower valve seat, wherein said lower valve seat is an elastomeric O ring fixed within said lower orifice and said upper valve seat is formed at the lower end of said lower stem-forming means, wherein said lower outlet orifice is defined by a tubular fitting received within a lower wall of said housing and having means extending from said housing for connection to a drain conduit and having means within said fitting for mounting said elastomeric O ring, and wherein said fitting has a threaded counterbore opening into said housing and said mounting means includes a bushing having an outer threaded portion threadedly received in said threaded counterbore, said bushing having a central passageway therethrough, a portion of which is sized and adapted to receive said lower valve stem-forming means therein and a

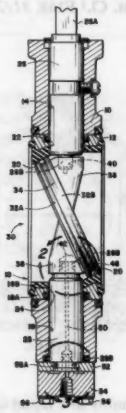
larger diameter portion below said stem-forming means-receiving portion forming an annular shoulder for receiving said O ring, and an annular plug received in said lower larger diameter portion for clamping said O ring between said plug and said shoulder, said plug being held between said bushing and the bottom of said counterbore.

4,327,765

BUTTERFLY VALVE HAVING LEAK DETECTING MEANS

Thomas A. Wilson, and James D. Ward, both of Tulsa, Okla., assignors to Dover Corporation, Tulsa, Okla.

Filed Aug. 15, 1980, Ser. No. 178,512
Int. Cl.³ F16K 1/226
U.S. Cl. 137—312 8 Claims



1. An improved butterfly valve having leak detecting means comprising:

a valve body having a flow passageway therethrough and having coaxial top and bottom shaft openings intersecting the flow passageway, the body having a valve seat therein circumscribing said flow passageway;

a disc having a circumferential sealing surface, the disc being supported in said body fluid passageway in a plane oblique to the axis of said shaft openings in said body, the disc being rotatable between an open position permitting fluid flow through the valve to either side of the disc, and a closed position wherein the disc circumferential sealing surface sealably contacts said valve seat around the full periphery thereof to block flow through said passageway, said valve seat and said disc sealing surface being cooperatively configured to provide two spaced apart, circumferential uninterrupted sealing contacts providing a circumferential valley therebetween;

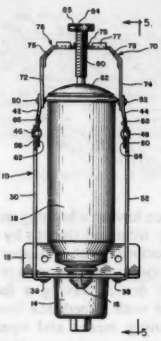
an upper and a lower shaft portion received in said body shaft openings, one shaft portion being secured to said disc and extending externally of said valve body providing means of positioning the disc, one shaft portion having a passageway therein communicating with the exterior of the valve body, and the disc having a passageway communicating between said circumferential valley and said shaft passageway thereby providing communication between said circumferential valley and the exterior of the valve whereby any fluid leakage past said valve seat and disc sealing surface may be bled to the valve exterior.

4,327,766

CANNISTER MOUNTING BRACKET

James W. Burke, Long Grove, and John N. Cook, Island Lake, both of Ill., assignors to Kold Ban International, Ltd., Algonquin, Ill.

Division of Ser. No. 879,253, Feb. 21, 1978, Pat. No. 4,231,391.
This application Sep. 25, 1980, Ser. No. 190,871
Int. Cl.³ F16K 27/08
U.S. Cl. 137—343 6 Claims



1. A bracket for mounting a cannister to a valve assembly in a starting fluid injection system for an internal combustion engine, said bracket comprising:

a valve assembly;

a frame member;

a cannister contacting member mounted on a first side of the frame member;

a valve assembly contacting member mounted on a second side of the frame member;

means for pivotably mounting the frame member to the valve assembly such that the frame member is pivotable between a first position, in which the cannister contacting member is oriented toward the valve assembly to contact and hold a cannister against the valve assembly, and a second position, in which the valve assembly contacting mamber is oriented toward the valve assembly to contact and protect the valve assembly in the absence of a cannister; and

a resilient, elastomeric member included in the valve assembly contacting member such that the elastomeric member is urged against the valve assembly when the frame member is in the second position, said elastomeric member operating to seal the valve assembly and to engage the valve assembly frictionally such that the valve assembly contact member is substantially prevented from vibrating out of contact with the valve assembly when the bracket is subjected to vibration associated with the internal combustion engine.

4,327,767

PRESSURE CONTROL VALVE

Siegfried Fehrenbach, Markgröningen; Eberhard Utz, Stuttgart, and Kurt Herbst, Burgstetten, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

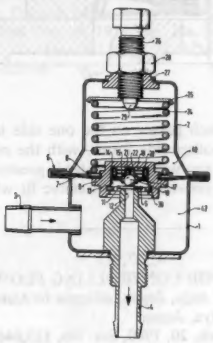
Filed Feb. 25, 1980, Ser. No. 124,047
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912799
Int. Cl.³ F16K 31/12
U.S. Cl. 137—510 3 Claims

1. A pressure control valve comprising

a housing,

a membrane within said housing and extending across a space enclosed thereby,

a biasing spring positioned between said housing and said membrane on one side thereof;
a supporting assembly secured to said membrane on its side opposite from said biasing spring;
an axially aligned bore in said support assembly;
a spring-loaded valve assembly slidably disposed in said bore in said supporting assembly,
said spring loaded valve assembly including a cup shaped adapter slidable within said bore, said adapter including an axially aligned conical region and cap inside thereof;
a storage spring in said bore between said support assembly and said adapter and surrounding said cap;



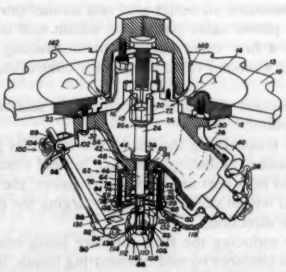
an axially aligned stationary valve seat positioned coaxial with said valve assembly cooperating with said spring-loaded valve assembly;
a retaining disc fastened to said adapter in spaced relation relative to said stationary valve seat,
a ball valve retained by said retaining disc, and
an axially disposed secondary spring means in said cap of said spring-loaded valve assembly which engages a zone of said ball valve inside of said conical region, said ball element cooperating with said stationary valve seat to control fluid flow therethrough.

4,327,768

BOTTOM OUTLET VALVE OPEN AND CLOSED INDICATOR

Gunter R. Behle, St. Peters, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,203
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—553 **12 Claims**



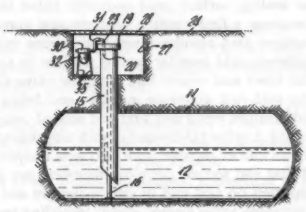
1. An open and closed position indicator assembly for use with a bottom operable tank car valve assembly comprising: an operating shaft for a lading valve extending downwardly through a tank car outlet chamber and including a lower connection portion at its lower end; an indicator housing integrally connected to that portion of the outlet chamber above said connection portion which surrounds said operating shaft; an indicator member located within said indicator housing having internal threads which engage an externally threaded portion of the outlet chamber; said threads providing for downward movement of said indicating member when the lading valve is moved toward the open position; said indicator member including a lower non-round opening which is adopted to be driven by a cooperating non-round portion of the operating shaft; whereby rotation of the operating shaft with an operating handle engaging said lower connection portion will move the lading valve between open and closed positions and will also move the indicator member downwardly to a position below the indicator housing to a position viewable by the operator when the lading valve is in the open position, and will move the indicator member upwardly to a position within the indicator housing which is not viewable by the operator when the valve is in closed position.

4,327,769

UNDERGROUND TANK FILL PIPE COMBINATION

Ralph C. Muller, Hopewell Junction, and Thomas R. Decker, Wallkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 6, 1980, Ser. No. 118,932
Int. Cl.³ F16K *45/00*
U.S. Cl. 137—587 **1 Claim**



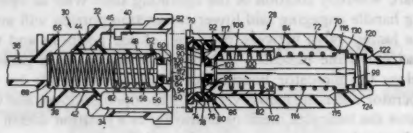
1. In combination with an underground tank for gasoline or the like product,
said tank having a fill pipe the top of which is below ground level and subject to being submersed by rainwater,
said fill pipe having a closure for sealing against vapor loss except when filling the tank,
only a single small diameter passageway through said closure for maintaining atmospheric pressure in said fill pipe during a product level test for detecting a leak,
a transparent liquid reservoir for observing if said small diameter passageway has been closed,
a flexible tube connecting said small diameter passageway to the top of said transparent liquid reservoir,
said reservoir having a spherical float therein,
said reservoir top having first and second passages therethrough,
said first passage being connected to said flexible tube and having a valve seat with guide means for guiding said spherical float into seating engagement therewith,
said second passage being open to the atmosphere, and
a standard for supporting said reservoir adjacent to said fill pipe with the level of said second passage opening to the atmosphere being below said ground level whereby rainwater level reaching said second passage will fill said reservoir sufficiently to cause said float to close said first passage.

4,327,770

QUICK DISCONNECT FLUID LINE COUPLING

Peter W. Brown, North Muskegon, Mich.; Chester G. DuBois, Zion, Ill.; David J. Hartke, Waukegan, Ill., and Paul R. Hunt, Lindenhurst, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 23, 1979, Ser. No. 96,834
Int. Cl.[3] F16L 29/00
U.S. Cl. 137—614.05 5 Claims



1. A fluid conduit coupling comprising first and second coupling members having means for connection to associated fluid conduits and means for connection to each other, said first coupling member including a first body having therein a fluid flow passage, and means for selectively preventing fluid flow through said fluid flow passage, said second coupling member having opposite ends and including a second body having therein a fluid passage, annular inner seal means housed in said second body fluid passage and adjacent one of said second coupling member ends, means for selectively preventing fluid flow through said second body fluid flow passage, said fluid flow preventing means including a movable valve sleeve housed in said second body fluid passage and having opposite ends, one of said movable valve sleeve ends including an annular sealing surface, said movable valve sleeve being movable between a first position wherein said annular sealing surface engages said annular inner seal means and a second position wherein said annular sealing surface is spaced from said annular inner seal means, said movable valve sleeve being engaged by said first coupling member and being moved to said second position when said first and second coupling members are joined, a valve pin housed in said movable valve sleeve and having an end engagable with said first coupling member when said first and second coupling members are joined, seal means supported on said end of said valve pin and engagable with said movable valve sleeve, means including spring means surrounding said valve pin and compressed between a portion of said valve pin and a portion of said movable valve sleeve for urging said seal means supported on said end of said valve pin into engagement with said movable valve sleeve, and means including a compression spring between said valve pin and said second coupling member body for urging said movable valve sleeve into engagement with said annular inner seal means.

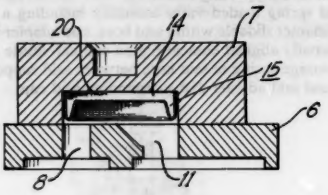
4,327,771

SANITARY WATER VALVE

Hans Nikolayczik, Minheim, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

Filed May 2, 1980, Ser. No. 146,535
Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918430
Int. Cl.[3] F16K 11/06, 47/02
U.S. Cl. 137—625.4 4 Claims

1. In a sanitary water valve including a valve body with control elements formed from at least two discs, the first of which discs is fixedly disposed and is provided with the inlet apertures which are attached on the one side to the water supply pipes and on the other side are directed against the second disc, which is movably arranged on the first disc and has a surface duct for deflecting functions which can be brought to overlap simultaneously in the inlet apertures and an outlet aperture also in the first disc, and in which there is one or more than one sieve, characterized in that said one or more than one sieve whose lineal dimensions are greater than the corresponding lineal dimensions of said surface duct so as to provide a compressive fit in said surface duct and whose height dimension is less than the depth of said surface duct and said sieve being in the form of a unitary piece of resilient material and shaped like a kind of basket, which in the non-mounted state has a conical outer annular portion and a conical inner



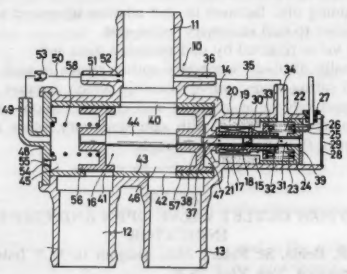
annular portion which passes on the one side into the sieve bottom and on the other side forms, with the outer annular portion, a clamping rim whose diameter is greater than that of the surface duct to provide a compressive fit when mounted therein.

4,327,772

VALVE DEVICE FOR CONTROLLING FLOW OF FLUID

Yasuhiro Kawabata, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 20, 1980, Ser. No. 123,046
Claims priority, application Japan, Feb. 23, 1979, 54-21202
Int. Cl.[3] F16K 11/07
U.S. Cl. 137—625.48 6 Claims



1. A valve device for controlling the flow of fluid comprising:

a body portion having an inlet port for receiving a fluid under pressure, an outlet port and a relief port;

a slidable piston valve positioned within said body and including a first valve portion for controlling said outlet port and a second valve portion for controlling said relief port;

first and second chambers defined within said body by said piston valve;

means for transmitting the fluid from said inlet port to said first chamber including a passage in fluid communication with said inlet port and said first chamber, the pressure of the fluid within said first chamber urging the piston valve into one direction;

means for reducing the fluid pressure being transmitted to said first chamber by said transmitting means, including an orifice and a check valve positioned in said passage; and

a solenoid valve assembly means actuated in proportion to electric current supplied thereto for transmitting the fluid from said inlet port to said second chamber in proportion to the magnitude of said electric current, the pressure of said fluid within said second chamber urging the piston valve into the other direction, said solenoid valve assem-

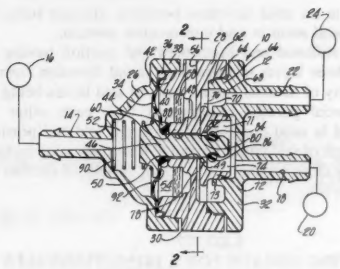
bly means including a hollow member secured within said body portion, a movable bobbin slidably positioned on the hollow member, a solenoid coil wound on the bobbin, and a pair of permanent magnets disposed within the body on opposite sides of said bobbin for moving said bobbin on said hollow member in response to an electric current in said coil, said second chamber being connected to said inlet port and exposed to atmospheric pressure.

4,327,773

VALVE ASSEMBLY

Charles A. Detweiler, Durand, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Filed Dec. 26, 1979, Ser. No. 107,278
Int. Cl.³ F15B *13/042*
U.S. Cl. 137—625.66 **5 Claims**



1. A valve comprising; a generally cylindrical housing, a moveable wall formed by a diaphragm and a stationary wall disposed in said housing and dividing said housing into a control chamber at one side of said diaphragm, a constant pressure chamber between said diaphragm and stationary wall and an operating chamber at one side of said stationary wall, a first valve passage communicating with said constant pressure chamber and said operating chamber, a pressure supply port, a second valve passage communicating said operating chamber with said supply port, valve closure means being moveable between a position wherein said first valve passage is closed and said second valve passage is open and a position in which said first valve passage is open and said second valve passage is closed, said valve closure means being connected to said moveable wall for movement therewith by way of an axially moveable operating member extending through said diaphragm and held in sealing engagement with said one side of said diaphragm in response to pressure in said control chamber less than said pressure in said constant pressure chamber for movement of said operating member with said diaphragm between said positions upon establishing a control pressure in said control chamber to place said supply port in communication with said operating chamber when said valve closure means is in one of said positions and to close said supply port and open said operating chamber to the atmosphere when said valve closure means is in another of said positions, said diaphragm having a valve portion forming part of said closure means engageable with an annular valve seat formed at one end of one of said valve passages, said valve portion being in a closed position on said seat when said valve closure means is in a first one of said positions and in an open position when said valve means is in a second one of said positions.

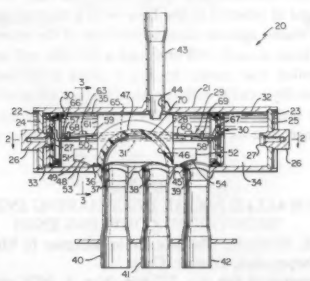
3. A valve assembly comprising; a generally cylindrical housing, a moveable wall formed by a diaphragm and a stationary wall disposed in said housing and dividing said housing into a control chamber at one side of said diaphragm, a constant pressure chamber between said diaphragm and stationary wall and an operating chamber at one side of said stationary wall, a first valve passage communicating with said constant pressure chamber and said operating chamber, a pressure supply port, a second valve passage communicating said operating chamber with said supply port, valve closure means being moveable between a position wherein said first valve passage is closed and said second valve passage is open and a position in which said first valve passage is open and said second valve passage is closed, said valve closure means being connected to said moveable wall for movement therewith by way of an axially moveable operating member extending through said diaphragm and held in sealing engagement with said one side of said diaphragm in response to pressure in said control chamber less than said pressure in said constant pressure chamber for movement of said operating member with said diaphragm between said positions upon establishing a control pressure in said control chamber to place said supply port in communication with said operating chamber when said valve closure means is in one of said positions and to close said supply port and open said operating chamber to the atmosphere when said valve closure means is in another of said positions, said housing being generally cylindrical, an end wall disposed coaxially with said stationary wall, a pair of axially extending ports formed in said end wall, one of said ports being disposed radially outwardly from the axis of said housing, one of said valve passages being disposed coaxially of said housing, said walls being disposed in sealing engagement with each other to form an annular chamber and radially inwardly extending passage means communicating said annular chamber with said one of said valve passages, said stationary wall and end wall being disposed in random relationship to each other about the axis of said housing, said one of said ports communicating with said annular chamber for all positions of said stationary wall relative to said end wall.

4,327,774

REVERSING VALVE CONSTRUCTION AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

Werner R. Bauer, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 958,030, Nov. 6, 1978, Pat. No. 4,240,469, which is a continuation-in-part of Ser. No. 825,958, Aug. 19, 1977, Pat. No. 4,188,975. This application Jan. 17, 1980, Ser. No. 112,856
The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.
Int. Cl.³ E03B *3/00*
U.S. Cl. 137—625.66 **4 Claims**



1. In a reversing valve construction having a housing means provided with a chamber carrying a movable valve member therein that controls port means of a valve seat means of said housing means through the relative position of passage means of said valve member relative to said port means, the improvement comprising a one-piece flexible sealing skirt carried by said valve member and extending outwardly therefrom in a cantilevered manner adjacent said valve seat means so as adapted to be exposed to fluid pressure in said chamber that will act directly thereon and cause said flexible skirt to flex and

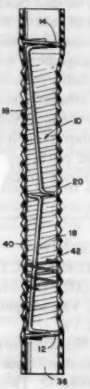
engage said valve seat means in a manner to tend to sealingly conform to the contour of said valve seat means and thereby seal said passage means to said valve seat means while permitting sliding movement therebetween, biasing means in said housing means and acting on said flexible skirt to urge the same toward said valve seat means, and a piston unit disposed in said housing means and being operatively interconnected with said valve member to move the same relative to said valve seat means, said biasing means being under compression between said piston unit and said flexible skirt, said valve member being adapted to float relative to said piston unit.

4,327,775

FORMABLE HOSE WITH A REFORMABLE INSERT

David N. Tally, Arvada, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed May 9, 1977, Ser. No. 795,343
Int. Cl.³ F16L *55/00, 11/11*
U.S. Cl. 138—103 **6 Claims**



1. In a corrugated type hose with cuff ends, a collapse resistant reinforcement, and an internal wall, the improvement comprising:

a reformable insert disposed in the hose and comprising at least two generally coaxial ring means, each having an outside diameter and yield point, the ring means axially spaced in relation to the hose with a ring means engaging and biased against annular portions of the internal wall of the hose at each cuff end; and a flexible and substantially uncoiled rod means having a yield point and oriented generally axially with the hose and attached to the spaced ring means, the rod means capable of and for being deformed past its yield point to a new retentive shape.

4,327,776

THIN-WALLED METAL DUCT HAVING INTEGRAL REINFORCED COUPLING ENDS

Robert H. Meserole, Maumee, Ohio, assignor to Manville Service Corporation, Denver, Colo.

Continuation of Ser. No. 737,666, Nov. 1, 1976, abandoned, which is a division of Ser. No. 630,123, Nov. 10, 1975, Pat. No. 4,044,581. This application Jan. 11, 1978, Ser. No. 868,606
Int. Cl.³ F16L *9/18, 9/00*
U.S. Cl. 138—109 **11 Claims**

1. In a tubular metal duct section formed by spirally wrapping and seaming a strip of metal around a mandrel wherein said strip of metal has longitudinally extending ribs and grooves, cutting the resulting tubular product into sections and reforming at least one end portion of each section so as to produce a tubular metal duct section comprising:

(a) an intermediate portion having a wall with ribs and grooves therearound between turns of a spiral seam, and

(b) at least one relatively stiff reformed end portion, integral with said intermediate portion,

the improvement comprising:

(i) said one end portion being stiffened and reinforced by being compressed axially so that the distance in an axial direction between adjacent turns of said spiral seam in said one end portion is substantially less than the distance in an axial direction between adjacent turns of said spiral seam in said intermediate portion,

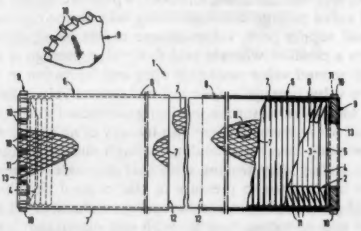
(ii) said stiffened and reinforced end portion having at least three layers of metal in a radial direction over a majority of its axial extent, each of said layers being in substantial parallel relationship with each other as viewed in axial cross-section through said end portion and each of said layers having at least one major surface in very close proximity to a major surface of another of said layers.

4,327,777

SUPPORTING SHEATH FOR A LONGITUDINALLY SHIRRED PACKAGING TUBE

Wolfgang Michel, and Reinhold Becker, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,861
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923187
Int. Cl.³ F16L *11/08, 11/10*
U.S. Cl. 138—118.1 **7 Claims**



1. A functional unit, comprising:

a longitudinal shirred packaging tube; and

a supporting sheath surrounding said shirred packaging tube, said supporting sheath comprising:

a generally tubular shaped supporting sheath comprised of a grid-like structure and having an inside diameter slightly larger than the outside diameter of said shirred packaging tube and a length substantially greater than the length of said shirred packaging tube, so that when said shirred packaging tube is placed inside of said supporting sheath, two protruding ends of said supporting sheath remain;

a generally planar star-like disc element on each of said protruding ends of said supporting sheath, each of said disc elements including a central aperture therein and a plurality of point-like projections spaced around its outer circumference, each of said disc elements having an outer diameter defined by the ends of said point-like protrusions

which is larger than the inside diameter of said supporting sheath;

a first of said star-like disc elements being slid with its aperture over one of the protruding ends of said supporting sheath and abutted against a first end of a shirred packaging tube contained in said supporting sheath and engaging with its point-like protrusions the grid openings of said supporting sheath when said sheath is folded back 180° upon itself forming a first turned-back end; and

a second of said star-like disc elements being slid with its aperture over the other of the protruding ends of said supporting sheath and abutted against the second end of a shirred packaging tube contained in said supporting sheath and engaging with its point-like protrusions the grid openings of said supporting sheath when said sheath is folded back 180° upon itself forming a second turned-back protruding end.

4,327,778

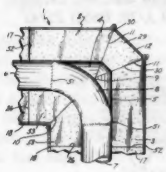
PIPE INSULATOR

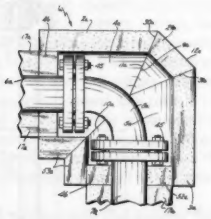
Robert O. Williams, 2264 Weber Rd., Gladwin, Mich. 48624

Filed May 9, 1980, Ser. No. 148,223

Int. Cl.³ F16L *59/14, 59/16*

U.S. Cl. 138—149 10 Claims





1. An insulator for pipe elbows, and the like, comprising:

first and second insulator legs, each having an interior channel shaped to respectively receive therein first and second pipe sections interconnected by an elbow;

said first and second legs each having a dihedral face adapted for orientation toward each other at a medial portion of the elbow; each dihedral face including inner and outer surfaces which intersect at the central axis of said associated leg; said inner surfaces being inclined from a plane perpendicular with the central axis of the associated leg at an angle substantially equal to one-half (½) of the included angle between said pipe sections, and said outer surfaces being inclined from the plane of the associated inner surface at an angle substantially equal to one-quarter (¼) of the included angle; and

a wedge-shaped insulator gore disposed between said leg outer surfaces with end faces inclined to mate with the same and form a closed, insulative sleeve for positioning about the elbow.

4,327,779

DRYER FELT HAVING A SOFT, BULKY SURFACE

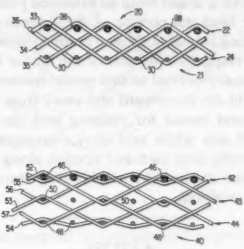
William T. Westhead, Waycross, Ga., assignor to Scapa Dryers, Inc., Waycross, Ga.

Continuation-in-part of Ser. No. 932,409, Aug. 9, 1978. This application Aug. 7, 1979, Ser. No. 64,364

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.³ D03D *25/00*

U.S. Cl. 139—383 A 31 Claims



1. A dryer felt comprising: a top surface; a plurality of machine direction yarns and a plurality of cross machine direction yarns interwoven according to a desired weave pattern to produce said top surface; and a preselected number of said yarns of said top surface being encapsulated yarns, said number being chosen to ensure that a major portion of said top surface is soft and bulky, each of said encapsulated yarns comprising a straight, twistless monofilament core that has no turns about its axis per unit of length, and a sheath completely surrounding and covering the full length of said core, said monofilament core comprising a bundle of filaments treated with a heat resistant resin to make the bundle act like a monofilament.

4,327,780

APPARATUS FOR LOOPING THE OUTERMOST CONVOLUTIONS OF SPIRAL BINDERS

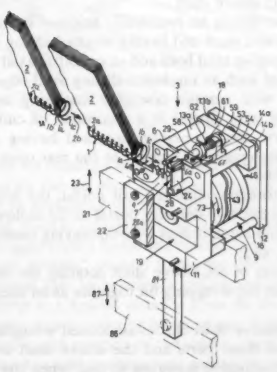
Hartmut Lehmann, Nürtingen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 156,262

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950120

Int. Cl.³ B21F *35/02*

U.S. Cl. 140—92.7 46 Claims



1. In an apparatus for looping the end portion of the outermost convolution around the neighboring convolution of a spiral wire binder whose convolutions extend through the

marginal perforations of a stack of sheets, the combination of means for locating the binder in a predetermined position; guide means having a first surface at least a portion of which is located in a predetermined plane; means for bending the end portion of the outermost convolution of the binder in said position outwardly of and over the neighboring convolution so that the thus bent end portion is adjacent to said portion of said surface; means for looping the thus bent end portion around the neighboring convolution of the binder in said position, including a device movable toward and away from said portion of said surface to and from an extended position of engagement with the bent end portion of the outermost convolution, said device being rotatable about a predetermined axis which is inclined with respect to the axis of the binder in said position and is substantially normal to said predetermined plane; means for moving said device toward and away from said portion of said surface; and means for rotating said device about said predetermined axis while said device engages the bent end portion to thereby loop such end portion along said portion of said surface and around the neighboring convolution of the binder in said position.

4,327,781

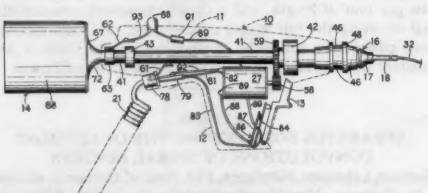
WIRE STORAGE AND WRAPPING TOOL

Hubert Zach, Berlin, Fed. Rep. of Germany, assignor to Micro Electronic Systems, Inc., Danbury, Conn.

Filed Feb. 25, 1980, Ser. No. 124,594

Int. Cl.[3] B21F *15/00*; B25F *1/00*; H02G *1/12*

U.S. Cl. 140—124 **11 Claims**



1. A wire storage and wrapping tool for making wrapped wire connections on wrapping posts comprising:

a portable housing having a front end and a rear end,

a hollow open-ended sleeve shaft extending through the housing and rotatably mounted therein with its open ends exposed,

a drive motor mounted in the housing and connected to rotate the sleeve shaft,

a hollow wrapping bit removably engaged in the front end of the sleeve shaft and having means forming a wrapping post-engaging axial bore and an eccentric axial wire-delivery portal with an insulation-slitting axial edge, and

a hollow wire storage container enclosing an extended length of wire wound in a succession of uniform layers concentric about a central axis, and having a wire exit portal disengageably secured to the rear open end of the sleeve shaft,

with the storage container's exit portal, the hollow sleeve shaft and the wire delivery portal of the hollow wrapping bit forming a continuous wire-conveying passage through the tool, and

with rotation of the sleeve shaft rotating the storage container and the wrapping bit together as an integral assembly,

wherein the sleeve shaft carries associated wrapping bit-holding parts, and these parts and the sleeve shaft are made of electrically-conductive materials so that when the tool forms an electrically-conductive wire-wrapped connection to a wrapping post telescoped within the post-engaging axial bore of the wrapping bit, electrical continuity is achieved through the wrapping wire and wrapping post to the sleeve shaft, the tool further comprising:

a first wiper electrically contacting the sleeve shaft;

an electrical conductive slip ring insulatively connected to the sleeve shaft and electrically terminating the other, non-wrapped, end of the wire stored in the storage container;

a second wiper for electrically contacting the slip ring;

an indicator electrically connected at one end to the second wiper;

means for connection to a source of electrical power having a first end electrically connected to the indicator and a second end electrically connected to the first wiper;

whereby electrical continuity is obtained between the two ends of the electrical power source connection means when an electrically-conductive wire-wrapped connection is made by the tool to a wrapping post inserted in the wrapping bit's axial bore, thereby connecting the source of electrical power to energize the indicator under such circumstances and thereby inform the operator that a proper electrically-conductive wire-wrapped connection has been made to the wrapping post.

4,327,782

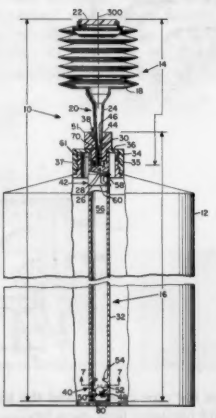
DISPENSING APPARATUS HAVING PORTABLE MEANS FOR DISPENSING PREDETERMINED QUANTITY OF LIQUID FROM A BULK CONTAINER

Gary E. McKibben, and John S. Amneus, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 3, 1980, Ser. No. 137,047

Int. Cl.[3] B65B *3/30*; B65D *25/42*

U.S. Cl. 141—26 **16 Claims**



1. A liquid dispensing apparatus having means for dispensing a predetermined quantity of liquid from a bulk container of said liquid at a location remote from said container, said dispensing apparatus comprising a dip tube having uppermost and lowermost ends, said dip tube having attachment means adjacent its uppermost end for securing said dip tube in said container, said dip tube including an air vent for venting said container to atmosphere, said dip tube including a one-way inlet valve adjacent its lowermost end to prevent liquid flow out of said dip tube, said dip tube also including a one-way pressure-operated outlet valve which permits air and liquid to be discharged from said dip tube into said container when pressure is applied inside said dip tube, said means for dispensing a predetermined quantity of liquid from said bulk container comprising a portable deformable reservoir having a suction chamber and a nozzle extending outwardly of said chamber, said nozzle being shaped for airtight, releasable engagement with said

uppermost end of said dip tube, whereby said dip tube and said suction chamber are maintained in exclusive fluid communication with one another when said nozzle is engaged in airtight relation to said dip tube.

4,327,783

FUEL SUPPLY PIPE ANTI SPLASH BACK DEVICE

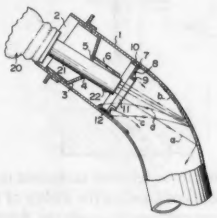
Masato Kanno, and Kyoji Yamamoto, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 18, 1980, Ser. No. 170,155

Claims priority, application Japan, Aug. 29, 1979, 54-119578[U]

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—349 **6 Claims**



1. A fuel supply system for supplying fuel to a fuel tank, comprising:

a fuel supply tube, a lower end of which is connected to said fuel tank, and an upper end of which defines a fuel input orifice for allowing a fuel supply nozzle to be inserted into the fuel supply tube;

a closure bung located within the fuel supply tube near the fuel input orifice and formed with an aperture for allowing said fuel supply nozzle to be inserted therethrough; and

a barrier member located within the fuel supply tube near the closure bung at a lower side thereof, comprising:

a substantially flat-annular first portion which lies in a plane which is intersected substantially perpendicularly by an axis of the fuel supply tube, and whose outer edge meets the inner surface of the fuel supply tube; and

a second portion substantially formed as a tube, a circumferential edge of one of whose ends is connected to an inner edge of said substantially flat-annular first portion, and which extends therefrom in the direction of the fuel tank with its axis substantially parallel to the axis of the fuel supply tube,

the lowest part of said substantially flat-annular first portion being formed with a gap communicating its upper surface to its lower surface.

4,327,784

APPARATUS FOR REFUELING AN AIRCRAFT FROM A SHIP AT SEA

James L. Denniston, Columbus, Ohio, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 9, 1980, Ser. No. 157,697

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—387 **8 Claims**

1. An apparatus for refueling an aircraft from a ship at sea, said ship subject to changes in vertical and horizontal position due to pitch, roll, and heave, comprising:

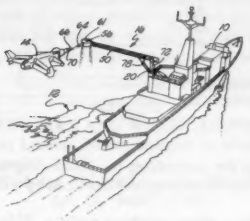
a first beam having first and second ends, said first end pivotally attached to said ship;

a second beam having first and second ends, said first end pivotally attached to said second end of said first beam;

positioning means coupled to both said first beam and said ship adapted to adjust the angular position of said first beam with respect to said ship in response to a first control signal;

propulsion means mounted to said second beam adapted to provide a variable propulsive force to adjust the angular position of said second beam with respect to said first beam in response to a second control signal;

fuel delivery means, having an outlet adapted to deliver fuel to said aircraft, mounted on said second beam; and



control means coupled to and adapted to provide said first and second control signals to control said positioning means and said propulsion means, respectively, so as to adjust said angular positions of said first and second beams such that said outlet of said fuel delivery means remains at a substantially constant position as said ship changes position.

4,327,785

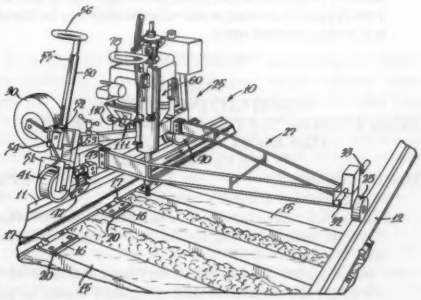
TIE ADZ

William P. McIlrath, Racine, Wis., assignor to Racine Railroad Products, Inc., Racine, Wis.

Filed Aug. 11, 1980, Ser. No. 176,968

Int. Cl.³ B27C *5/00*

U.S. Cl. 144—133 B **8 Claims**

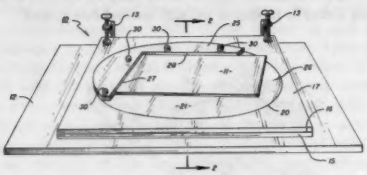


1. A tie adz for cutting a section from a railroad tie adjacent a tie plate with the tie plate still in association with the tie preparatory to regauging the rails comprising, a frame with rail-engaging wheels supportable on one of parallel spaced rails, an outrigger on the frame and extending to the other rail, a cutter head mounted on said frame for pivotal movement about a vertical axis to position a cylindrical milling cutter carried thereby at a desired distance from the inner edge of a tie plate, gauge means coacting between said frame and cutter head for setting said position of the cutter, means for locking the cutter head in said position, and means for advancing the cutter lengthwise of the cutter head to a cutting depth relative to the tie whereby advance of the frame along the rail moves the cutter through the tie and cuts said section.

4,327,786
WORK FIXTURE

Orvo E. Markkula, Canton, N.Y. 13617

Filed Jul. 11, 1980, Ser. No. 167,678
Int. Cl.³ B27C 5/02
U.S. Cl. 144—154 6 Claims



1. Apparatus for controlling the positioning and movement of a workpiece as it is being worked upon by a tool or the like including

a base having a planar working surface,

a guide member situated upon the working surface of the base, said guide member having an extended flat top surface for slidably supporting a workpiece thereupon and a cylindrical opening passing centrally therethrough so that the axis of said opening is perpendicular with the plane of the working surface,

a cylindrical turntable positioned within said opening, the outer periphery of the turntable having a close running fit with the side wall of said opening whereby the turntable is rotatable within the guide member about a fixed axis and the top surface of said turntable being coplanar with the extended surface of the guide member,

a workholder secured to the top surface of the turntable that projects upwardly above said top surface of the turntable, said workholder having at least one raised indexing surface formed therein for receiving a workpiece in abutting contact thereagainst whereby the workpiece abutting the surface and the workholder will rotate with said turntable about said fixed axis, and

hand-engageable means associated with the turntable to facilitate rotation of the turntable within the guide so that a workpiece mounted in the workholder can be turned as it is being worked upon.

4,327,787
LOG SPLITTING ASSEMBLY

Robert J. Loratto, 7010 Locust Ct., Owens, Md. 20836

Filed Jan. 11, 1980, Ser. No. 111,214
Int. Cl.³ B27L 7/00
U.S. Cl. 144—193 C 5 Claims

1. A log splitting assembly comprising:

(a) elongated means mounted on the bottom end of which is a wedge adapted to be forced into a log or the like for splitting the same,

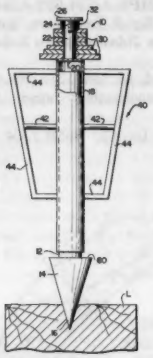
(b) an elongated driving sleeve having a diameter so as to telescopically slide over said elongated means to permit vertical reciprocation of said sleeve relative to said elongated means, said driving sleeve having a sleeve cap secured to the top thereof,

(c) post means secured to said sleeve cap and extending upwardly therefrom, said post means having a threaded opening formed in the upper end thereof,

(d) a plurality of weights disposed around said post means, with the bottommost weight resting on said cap sleeve,

(e) means for detachably retaining said weights on said post means, comprising a locking cap having a threaded shank engageable with said threadable opening in said post means and a resiliently compressible washer interposed between said locking cap and the uppermost of said plurality of weights; and

(f) a handle assembly secured to said driving sleeve below said sleeve cap, said handle assembly comprising a plurality of frame sections secured to each other and to said driving sleeve to provide a frame, and a pair of handles positioned on either side of said driving sleeve and secured thereto and to said frame to facilitate movement of said driving sleeve during use;

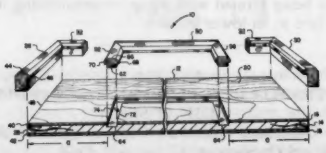


whereby weights can be selected as desired to vary the total weight to best accommodate the ability of the user of the assembly to vertically reciprocate the driving sleeve and weights, thereby most efficiently effecting splitting of the log.

4,327,788
PANEL DOOR AND METHOD OF CONSTRUCTION

Dana L. Turner, 2701 McGee Dr., Norman, Okla. 73069

Filed Apr. 11, 1980, Ser. No. 139,447
Int. Cl.³ B27F 7/00
U.S. Cl. 144—319 7 Claims



1. A method for constructing a raised panel door from a conventional laminated door panel having a core and a relatively thin veneer facing comprising the steps of:

securing an outer molding to a side of the panel to conceal the exposed ends of the core and facing;

cutting a groove through said veneer facing and into said core using said outer molding as a guide;

installing an inner molding in said groove, said inner molding having a lip for concealing an upper edge of said groove.

4,327,789

METHOD AND APPARATUS FOR THE CHIPPING DISSECTION OF TREE LOGS INTO ALL-ROUND MACHINED LUMBER PRODUCTS

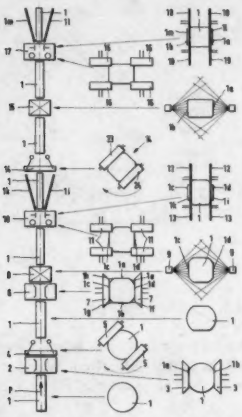
Alfred Reuter, Oberkirch, Fed. Rep. of Germany, assignor to Gebruder Linck, Maschinenfabrik und Eisengiesserei "Gatterlinck", Oberkirch, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 140,840

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928949

Int. Cl.³ B27C *1/08*

U.S. Cl. 144—326 R 8 Claims



1. In a method of processing an elongated log to produce boards therefrom including the steps of cutting said log to present four flattened faces thereon with wany edge regions between adjacent faces, said faces being arranged in pairs with the faces of each pair being generally opposed, milling said wany edge regions, and severing boards from the log at the areas of said milling, the improvement which comprises initially milling only a part of said wany edge regions, severing first boards from one pair of said opposed, flattened faces of the log and at the areas of said initial milling, and subsequently milling the remainder of said wany edge regions and severing second boards from the other pair of said opposed flattened faces of the log at the areas of said subsequent milling.

4,327,790

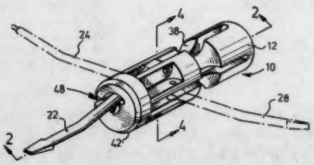
FASTENER DRIVING DEVICE WITH MULTIPLE BITS

Larry G. H. Stevens, Georgetown; Edmund G. F. Sweet, Oakville, and Franklin V. Vresk, Kitchener, all of Canada, assignors to MIC Manufacturing and Machine Works Ltd., Waterloo, Canada

Filed Jul. 3, 1980, Ser. No. 165,707

Int. Cl.³ B25G *1/08*

U.S. Cl. 145—62 5 Claims



1. A driving device for driving rotatable fasteners, said driving device comprising a handle, a plurality of driving bits spaced about said handle, pivot means pivotally connecting each of said bits to one end of said handle to permit movement of each of said bits from a stored position in which said bit lies alongside said handle to an operative position in which said bit extends beyond said one end of said handle and lock means rotatably supported on said handle and operable between said bit and said handle to lock said bit in said operative position, said lock means including a passageway selectively alignable with each of said bits by rotation of said lock means relative to said handle, said bit passing through said passageway in moving from said stored to said operative position and being locked in said operative position by rotation of said lock means to move said bit and said passageway out of alignment.

4,327,791

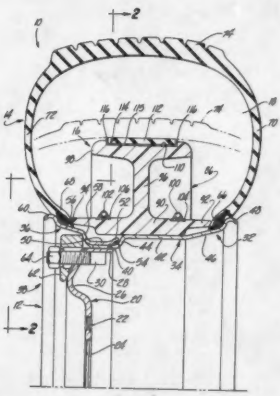
SAFETY TIRE AND WHEEL ASSEMBLY

Don S. Strader, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Sep. 29, 1980, Ser. No. 192,337

Int. Cl.³ B60C *17/04*

U.S. Cl. 152—158 4 Claims



1. A safety tire and wheel assembly comprising a vehicle wheel including a wheel rim having axially spaced bead flanges and a rim base; a tire having axially spaced bead toes and a circumferential tire tread; and a safety support means comprising core means including a first portion extending circumferentially around said rim base and having axially spaced side edges clamping said bead toes against said bead flanges such that said tire tread is spaced radially outwardly of said rim base to define a tire cavity, a second portion integral with said first portion and extending radially outwardly into said cavity, said second portion terminating radially inwardly of said tire tread in a circumferential support ledge including a circumferential depression on said ledge providing a radially outwardly directed bearing surface, said depression having axially opposed side walls and a radially outwardly directed base wall, a circumferentially continuous band of resilient construction, and bearing means comprising a plurality of circumferentially segmented bearing elements carried by said band and slidably mounting said band on said bearing surface in said depression with said bearing means engaging said side walls for preventing axial displacement of said band with respect to said core means and engaging said base wall for slidably supporting said band with respect to said core means, said band extending radially outwardly from said ledge and being adapted to support said tire tread in operation of said assembly upon loss of air pressure in said cavity, said band and segmented bearing elements being radially retained in said depression by said circumferentially continuous resilient band, said band being adapted for resilient circumferential expansion

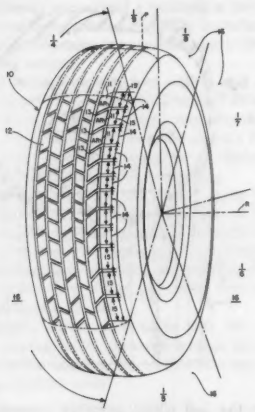
for assembly and disassembly of said band and bearing elements onto said ledge.

4,327,792

SPREADING NOISE GENERATED BY LOAD SUPPORTING ELEMENTS

Samuel P. Landers, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 877,789, Feb. 14, 1978, abandoned.
This application Jan. 25, 1980, Ser. No. 115,592
Int. Cl.[3] B60C *11/10*
U.S. Cl. 152—209 R 51 Claims



1. In an apparatus provided with a plurality of surface-engaging design cycles located on a curved face of the apparatus, said design cycles defining a dimensional parameter varying in a predetermined manner, an improved arrangement in which:

the design cycles are divided into a plurality of not less than three complete modulation cycles of different lengths, the rounded fractional portions of the curved face represented by the different lengths corresponding to three different terms of the group consisting of the first nine terms of the harmonic series, whereby the character of the sound emitted when the design cycles move against a surface is altered.

36. A method of manufacturing the tread of a tire adapted to rotate around an axis, the tread being provided with a plurality of circumferentially extending tread design cycles defining a dimensional parameter varying in a predetermined manner, said method comprising the steps of:

dividing the design cycles into a plurality of not less than three complete modulation cycles of different lengths, and

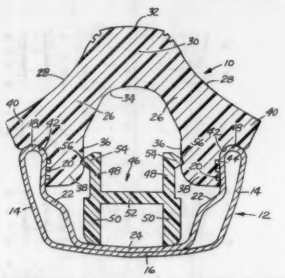
arranging the rounded fractional portions of the circumference represented by the different lengths to correspond to three different terms of the group consisting of the first nine terms of the harmonic series, whereby the character of the sound emitted when the tread rotates against a road surface is altered.

4,327,793

BICYCLE TIRE WITH COMPRESSION AMPLIFICATION

Ransome J. Wyman, 821 Camino Colibri, Calabasas, Calif. 91302; Richard A. Alshin, 5565 St. Irmo Walk, Long Beach, Calif. 90803, and Charles H. Gilbert, 2101 Camino Rey, Fullerton, Calif. 92633

Filed May 16, 1978, Ser. No. 906,691
Int. Cl.[3] B60C *7/00*
U.S. Cl. 152—323 4 Claims



1. A vehicle tire for use on a wheel rim having a pair of laterally spaced bead flanges and side walls, and a circumferential channel forming the bottom of the rim, said tire comprising:

a solid, monolithic tire body made of urethane elastomer and having a circumferentially extending, arch-shaped tunnel formed on the inside of the tire body, said tire body having inclined side walls that converge outwardly to form a V-shaped cross-section, the apex of which forms the tread portion of the tire;

said side walls terminating in a thickened portion forming a bead shoulder that seats on the bead flange of the wheel rim and juts over the top edge thereof, and said thickened portion also forming a bead that extends down into the wheel rim and lies flat against the side wall thereof;

said inclined side walls supporting said tread portion at an angle such that compression of the side walls under load results in inward deflection of the tread portion by an amount greater than the deflection of the side walls;

wherein said tread portion deflects under load by compressing said tire side walls, and the amount of deflection of said tread being greater than the compression of said tire side walls by an amount that is a function of the angle of inclination of said tire side walls relative to the plane of rotation of the tire; and

wherein the deflection of the tread portion under load is governed by the percent of change equation:

$$\% \text{ change of } B = \frac{\Delta B}{.01B_1} =$$

$$\frac{B_1 - B_2}{.01B_1} = \frac{\sqrt{(C_1 - A)(C_1 + A)} - \sqrt{(C_2 - A)(C_2 + A)}}{.01B_1}$$

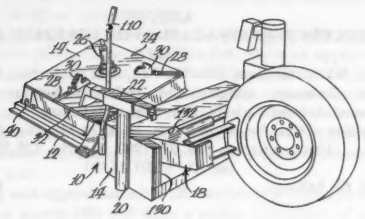
in which B is the height of the tread portion above a transverse line drawn between said bead flanges; B_1 is the height of the unloaded tread portion; B_2 is the height of the loaded tread portion; C_1 is the length of the unloaded tire side wall; C_2 is the length of the loaded tire side wall; A is one-half the distance between the bead flanges; and ΔB is equal to $B_1 - B_2$.

4,327,794

TIRE CHANGING APPARATUS

Charles G. Leeper, and John F. Wood, both of LaVergne, Tenn., assignors to Hennessy Industries, Inc., Elk Grove Village, Ill.

Division of Ser. No. 940,831, Sep. 7, 1978, Pat. No. 4,293,026.
This application Mar. 27, 1980, Ser. No. 134,514
The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.
Int. Cl.³ B60C 25/06
U.S. Cl. 157—1.28 4 Claims



1. A bead loosener for a freely movable, unclamped tire and wheel assemblage comprising:

first and second bead loosener assemblies;

means mounting said assemblies in alignment with each for movement in a path toward and away from each other and defining a space between said assemblies in which a tire and wheel assemblage may be freely disposed without being clamped;

means for moving said assemblies toward and away from each other;

each of said bead loosener assemblies including a pair of bead loosening shoes, one of said shoes of each assembly being fixed for movement only in said path and the other of said shoes in each assembly being m· ·able relative to the associated fixed shoe to one side oi said path, said movable shoes following said fixed shoes as said assemblies are moved toward each other so that said fixed shoes each make initial engagement with with respective side walls of a tire and wheel assemblage disposed in said space between said assemblies and continued movement of said assemblies will cause the movable shoes to subsequently frictionally engage the tire and move to said one side of the path and between the tire bead and the rim of the wheel to fully loosen the bead while the fixed shoes prevent movement of the unclamped tire and wheel assemblage out of said space and said path.

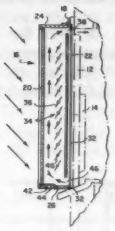
4,327,795

WINDOW CASEMENT

Everett T. Wheeler, 293 Mount Vernon St., Lawrence, Mass. 01843

Filed Jan. 12, 1981, Ser. No. 224,143
Int. Cl.³ E06B 3/32
U.S. Cl. 160—98 28 Claims

1. In combination with a window embodying a window frame and upper and lower sash, means defining a casement hingedly connected at its upper end to the window frame for swinging movement from a position of engagement with the window frame to a position standing angularly away from the window frame, said casement being comprised of a light-transmitting material and having at its upper end an opening paralleling the top of the window so that it will be in communication with the interior of the house when the upper sash is lowered and means in the casement for on the one hand absorbing heat from the sun and on the other hand reflecting heat from the sun.

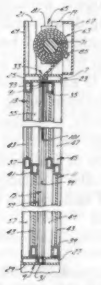


4,327,796

SHUTTER ASSEMBLY

Itzchak Rochman, Hampstead, Canada, assignor to Olympic Aluminum Mfg., Ltd., Canada

Filed Apr. 18, 1980, Ser. No. 141,348
Int. Cl.³ E06B 3/32
U.S. Cl. 160—101 5 Claims



1. A combined window and blind unit comprising:

a window frame;

an inner glass assembly;

an outer glass assembly;

first mounting means forming part of the window frame for mounting the inner glass assembly therein;

second mounting means forming part of the window frame, spaced from the first mounting means, for mounting the outer glass assembly therein;

a blind stored adjacent the inner and outer glass assemblies; and

means for moving the blind from its stored position through an opening in the frame into the space betweem the inner and outer glass assemblies;

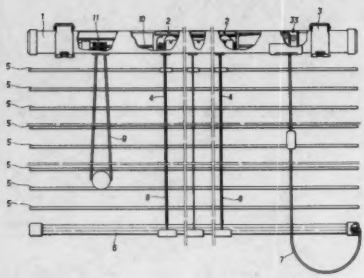
spacer means provided between the first and second mounting means, made from a poor heat conducting material, and located within the confines of the first and second mounting means, said first and second mounting means and said spacer means including opposed vertical components, the vertical components of said spacer means including guide means in the form of channels adapted to receive and guide the vertical edges of the blind.

4,327,797

HORIZONTAL TYPE BLIND

Yukihiko Nakajima, Ohmi hachiman; Mitsuru Ohkubo, Chofu; Tadakatsu Hashimoto, and Shigeki Nakamura, both of Yokkaichi, all of Japan, assignors to Kabushiki Kaisha Yokota, Tokyo, Japan

Filed Sep. 20, 1979, Ser. No. 77,414
Claims priority, application Japan, Jun. 22, 1979, 54-00481; Jan. 22, 1979, 54-005072[U]; Jan. 25, 1979, 54-007162[U]
Int. Cl.[3] E06B *9/322*
U.S. Cl. 160—168 R 1 Claim



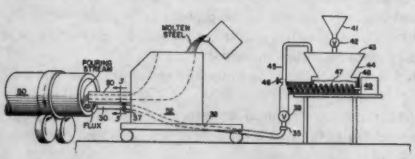
1. A venetian blind, comprising a head box, a plurality of horizontal slats suspended below said head box by at least one pair of spaced straps, means cooperable with said straps for tilting said slats, a manually operable control cord, means responsive to operation of said control cord for raising and lowering said slats, and means for stopping lowering of the slats, said stopping means including a rotatably supported guide roller for guiding downwardly said control cord which extends lengthwise within said head box, a guide member disposed inside a corner formed by said control cord guided by said guide roller so as to extend slantingly upwardly and having a toothed surface thereon facing the portion of said control cord guided downwardly, a toothed roller loosely fitted in a gap of inverted V-shape defined by said surface of said guide member and the portion of said control cord extending downwardly, and a pinch roller rotatably supported on said guide member on the side of said control cord opposite said surface and said toothed roller.

4,327,798

METHOD OF APPLYING FLUX

Edward D. McCauley, Columbiana; James C. Farlow, and William T. Adams, Jr., both of Birmingham, all of Ala., assignors to American Cast Iron Pipe Company, Birmingham, Ala.

Filed May 1, 1980, Ser. No. 145,482
Int. Cl.[3] B22D *13/02, 27/18*
U.S. Cl. 164—56.1 24 Claims



1. A method for supplying fluxing material into a centrifugal casting mold for metallic tubes, the steps comprising:

(a) pouring molten metal into one end of a tubular centrifugal casting mold having casting surfaces, thus establishing a pouring stream of molten metal, the casting mold being rotated at a speed such that the molten metal is immediately distributed into an annulus upon contact of the molten metal with the casting mold, this annulus of molten metal moving lengthwise along the mold to the other end;

(b) providing a stream of fluxing material which is injected into the pouring stream of molten metal, the fluxing material entering the mold from said one end and contacting the pouring stream only after the time when the molten metal has wetted the other end of the mold opposite said one end; and

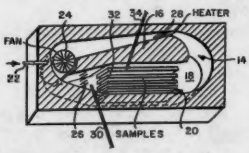
(c) maintaining the pouring stream of molten metal at least until a time when the injection of fluxing material is ended.

4,327,799

PROCESS AND APPARATUS FOR FREEZING LIVING CELLS

Max W. Scheiwe, and Günther Rau, both of Aachen, Fed. Rep. of Germany, assignors to Helmholtz-Institut fur Biomedizinische Technik, Fed. Rep. of Germany

Division of Ser. No. 49,302, Jun. 18, 1979, Pat. No. 4,304,293.
This application Feb. 27, 1980, Ser. No. 125,268
Int. Cl.[3] F25B *13/00*
U.S. Cl. 165—2 12 Claims



1. The process for freezing cell suspensions in a freezing chamber using gaseous or vaporizing cold nitrogen for heat transfer comprising the steps of

locating samples of the cell suspension in a container of fixed shape,

placing at least one of said containers in the freezing chamber,

simultaneously monitoring the temperature of the cells in at least one container for detection of the supercooling, the freezing temperature and the length of the freeze plateau, and the temperature of the chamber,

regulating the cooling of the chamber at predetermined rates automatically in response to the supercooling, the freezing temperature, the length of the freeze plateau, mass and geometry and heat transfer properties inside and outside the sample containers, including quick rewarming of the chamber after the end of the plateau phase during freezing,

generating a homogeneous temperature field inside the sample containers so that each single volume element of the sample is cooled linearly and for a defined length of time, and

providing a substantially small temperature deviation from the mean temperature at any point inside the sample containers during freezing by respectively controlling the cooling and warming of said chamber.

4,327,800

METHOD OF MANUFACTURING HEAT EXCHANGER CORE AND ASSEMBLY THEREFOR

Kenneth J. Miller, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00765, § 371 Date Sep. 24, 1979, § 102(e) Date Sep. 24, 1979
PCT Filed Sep. 24, 1979, Ser. No. 99,139
Int. Cl.[3] F28F *13/12;* B23P *15/26*
U.S. Cl. 165—79 14 Claims

1. A method of forming a structure (10) having at least one tube (12) which has a first pair (20, 22) of opposite sides and

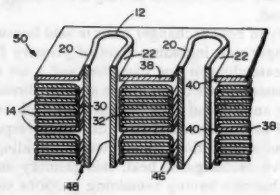
second pair (24, 26) of opposite sides connecting together the first pair (20,22) of opposite sides and having a plurality of fins (14) having holes (28) having a first pair (30,32) of opposite edges connected together by a second pair (34,36) of opposite edges, the tube (12) fitting in and being soldered to said fins (14) at said holes (28), comprising:

fitting said tube (12) in said holes (28) with a gap (42 or 44) between at least one of said first pair (20,22) of sides and the adjacent edge (30 or 32) of said holes (28) associated with said one of said first pair (20,22) of sides, said second pair (24,26) of opposite sides abutting against said second pair (34,36) of opposite edges;

positioning a source (38) of solder having a generally matching hole (40) to those in said fins (14) above an upper one of a selected pair of adjacent fins (14) and with said matching hole (40) about said tube (12), a space intermediate said selected pair being free of any solder source;

aligning said tube (12) with said solder source (38) generally vertically above said fins (14) to form a precore assembly (50); and

heating said aligned assembly (50) sufficiently to liquify said solder source (38) and form a solder connection of said tube (12) to at least said selected pair of said fins (14) below said source (38) at said holes (28), said solder source (38) when liquified flowing through and filling said gap



(42 or 44) associated with at least said selected pair of said fins (14) below said source (38), said solder of said source (38) subsequently hardening in said gap (42 or 44) associated with at least said selected pair of said fins (14) below said source 38 to form solder connections.

10. An assembly (50) formed into a heat exchanger core (10) via bulk heating treatment thereof, comprising:

a plurality of tubes (12), each having a first pair (20,22) of opposite sides and a second pair (24,26) of opposite sides connecting together said first pair (20,22) of sides;

a plurality of generally parallel fins (14) each having a plurality of holes (28) having a first pair (30,32) of opposite edges and a second pair (34,36) of opposite edges connecting together said first pair (30,32) of edges, said fins (14) being mounted at said holes (28) generally orthogonally to said tubes (12) with a gap (42 or 44) between at least one of the first pair (20,22) of sides and at least one of said first pair (30,32) of edges, said second pair (24,26) of opposite sides abutting against said second pair (34,36) of opposite edges; and

a plurality of sources (38) of solder, each having a plurality of holes (40) generally matching holes in said fins (14), said sources (38) being mounted at said matching holes (40) to said tubes (12) between said fins (14), at least two fins (14) being disposed intermediate each of said sources (38) of solder.

4,327,801

CYLINDRICAL HEAT EXCHANGER USING HEAT PIPES

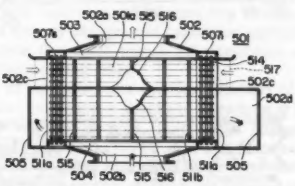
Tatsuya Koizumi, Tokyo; Shuichi Furuya; Koji Matsumoto, both of Yokohama, and Kensuke Karasawa, Machida, all of Japan, assignors to The Furukawa Electric Company, Ltd., Tokyo, Japan

Division of Ser. No. 875,092, Feb. 3, 1978, Pat. No. 4,206,807. This application Nov. 7, 1979, Ser. No. 91,949

Claims priority, application Japan, Jan. 31, 1977, 52-10200[U]; Jun. 2, 1977, 52-71954[U]; Aug. 17, 1977, 52-98335; Aug. 17, 1977, 52-98336; Aug. 17, 1977, 52-98337

Int. Cl.[3] F28D *15/00*

U.S. Cl. 165—104.21 **2 Claims**



1. A cylindrical heat exchanger comprising:

a tubular casing provided with openings in middle portions of both an upper side and a lower side and in its circumferential side;

a transverse partition plate dividing the inside of the casing into an upper part and a lower part; and

a plurality of heat pipe group units vertically arranged to pierce through the peripheral area of the transverse partition plate and arranged into a polygonal annular configuration as viewed in a plan view, each unit being formed by arranging a plurality of heat pipes into a rectangular sectional configuration, the units being separated from each other by a radial array of vertical partition walls, the heat pipes in each unit being equally spaced;

the upper and lower parts of the inside of the casing being formed to serve as gas flow passages in a counter flowing manner above and below the transverse partition plate;

the upper part of the plurality of heat pipe group units being arranged to function as a radiating portion which allows air to be heated to come into contact therewith flowing therethrough while the lower part of the plurality of heat pipe group units below the partition plate is arranged to function as a heat receiving portion which allows a high temperature gas to come in contact therewith flowing therethrough;

the opening provided in the circumferential side of the casing on the side of the radiating portion being arranged to serve as an intake part for taking in air;

the opening provided in the middle portion of the upper side of the casing being arranged to serve as an exhaust part for the air;

the opening provided in the middle portion of the lower side of the casing being arranged to serve as an intake part for a high temperature gas; and

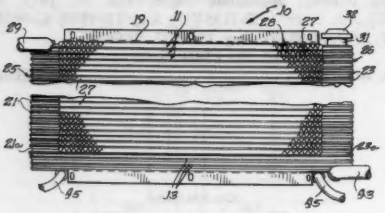
a flat helical duct having an open end is formed to surround the opening provided in the circumferential side of the casing on the side of the heat receiving portion, the open end of the helical duct being arranged to serve as an exhaust port for the high temperature gas.

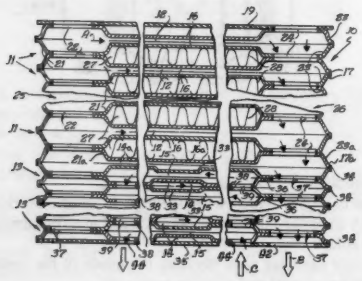
4,327,802

MULTIPLE FLUID HEAT EXCHANGER

Richard P. Beldam, Mississauga, Canada, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 18, 1979, Ser. No. 49,684
Int. Cl.³ F28D 1/02; F28F 3/00
U.S. Cl. 165—153 38 Claims





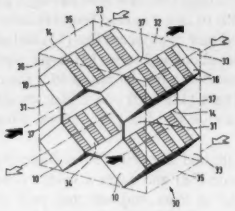
1. A multiple fluid heat exchanger comprising a plurality of longitudinally extending first fluid conducting elements disposed in a stacked relation, a plurality of longitudinally extending second fluid conducting elements disposed in stacked relation with said first fluid elements, said first set of fluid elements including pairs of dished plates joined at their edges and having enlarged openings at each end forming a fluid inlet at one end and a fluid outlet at the opposite end, a first fluid passage in each first element extending between said pairs of openings, second fluid passages formed between said first fluid passages of said first set of elements, said second set of fluid elements including pairs of flat plates joined together with outwardly diverging peripheral edges joined to the peripheral edges of the next adjacent joined pairs of plates and having enlarged openings at each end forming a fluid inlet at one end and a fluid outlet at the opposite end, fluid passages formed between said pairs of joined plates bounded by the joined peripheral edges and extending between said enlarged openings, oppositely raised ribs in each joined pair of plates forming a third fluid passage therein located between said last mentioned fluid passages, raised flanges at each end of said raised ribs defining axially aligned second openings for entrance and exit of said third fluid, said raised flanges of the pairs of joined plates abutting and joined to the raised flanges of the next adjacent pairs of plates, said second openings in said second elements spaced from and located between said enlarged openings in said elements and communicating with said third fluid passages extending therebetween, said enlarged fluid inlets and outlets in said first and second fluid elements being in registry to form at least one fluid inlet chamber and at least one fluid outlet chamber.

4,327,803

ARRANGEMENTS FOR CROSS-FLOW HEAT EXCHANGER UNITS

Herbert Muellejans, Stuttgart, and Hans-Joachim Koetz, Nuertingen, both of Fed. Rep. of Germany, assignors to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Apr. 24, 1979, Ser. No. 32,826
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1978, 2818041
Int. Cl.³ F28F 3/00
U.S. Cl. 165—166 4 Claims



1. A cross-flow heat exchanger arrangement comprising:

a housing;

primary and secondary flow channels passing through said housing, each said flow channel having ends; said primary flow channel having a primary flow port at each end, said secondary flow channel having a secondary flow port at each end;

a plurality of heat exchanger units in said housing, each heat exchanger unit including a set of primary flow passageways extending in one direction and a set of secondary flow passageways extending in another direction, said sets of first and second flow pasageways each being portions of said first and second flow channels, respectively, said first and second flow passageways providing a relatively intensive exchange of heat, said primary and secondary flow channels having remaining portions serving for inflow and outflow;

said remaining portions of said primary flow channel including first, second and third primary segments, said first primary segment extending between one primary port of said primary flow channel and said primary flow passageways of one heat exchanger unit to establish communication therebetween, said second primary segment extending between said one primary port of said primary flow channel and said set of primary flow passageways of another heat exchanger unit to establish communication therebetween, said third primary segment extending between the other primary port of said primary flow channel, on the one hand, and said sets of primary passageways of both said one and said other heat exchanger units, on the other hand, to establish communication therebetween, so that said set of primary flow passageways of said one heat exchanger unit is fluidly coupled in parallel with said set of primary flow passageways of said other heat exchanger unit and so that a fluid flow path is established which is divided between one primary branch including said one heat exchanger unit and another primary branch including said other heat exchanger unit in which fluid flowing between said one primary port and said other primary port through said one primary branch passes only through said one heat exchanger unit and in which fluid flowing between said one primary port and said other primary port through said other primary branch passes only through said other heat exchanger unit;

said remaining portions of said secondary flow channel including first, second and third secondary segments, said first secondary segment extending between one secondary port of said secondary flow channel and said set of sec-

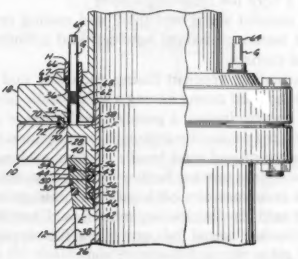
ondary flow passageways of said one heat exchanger unit to establish communication therebetween, said second secondary segment extending between said one secondary port of said secondary flow channel and said set of secondary flow passageways of said other heat exchanger unit to establish communication therebetween, said third secondary segment extending between the other secondary port of said secondary flow channel, on the one hand, and said sets of secondary passageways of both said one and said other heat exchanger units, on the other hand, to establish communication therebetween, so that said set of secondary flow passageways of said one heat exchanger unit is fluidly coupled in parallel with said set of secondary passageways of said other heat exchanger unit and so that a fluid flow path is established which is divided between one secondary branch including said one heat exchanger unit and another secondary branch including said other heat exchanger unit in which fluid flowing between said one secondary port and said other secondary port through said one branch passes only through said one heat exchanger unit and in which fluid flowing between said one secondary port and said other secondary port through said other secondary branch passes only through said other heat exchanger unit.

4,327,804

GEOTHERMAL WELL HEAD ASSEMBLY

Leaman T. Reed, Bakersfield, Calif., assignor to Midway Fishing Tool Co., Bakersfield, Calif.

Filed Jul. 31, 1980, Ser. No. 139,824
Int. Cl.³ E21B *33/03*; F16L *19/00, 55/00*
U.S. Cl. 166—97 **2 Claims**



1. A geothermal well head assembly of the type that includes a first flange on the upper extremity of a first casing that is cemented in and extends down a well bore that is in communication with a heated fluid producing zone, said first flange having a cylindrical interior surface, a spool that includes second and third flanges; a valved manifold that controls the flow of heated fluid from said zone which manifold has a fourth flange on the lower end thereof; a plurality of bolts that removably secure said second flange to said first flange, and said fourth flange to said third flange; a second casing that has an external diameter substantially smaller than the interior diameter of said first casing and concentrically disposed therein, said first and second casing defining an annulus shaped space therebetween, said second casing having an upper end adjacently disposed to said second flange and a lower end that occupies a fixed position relative to said heated fluid producing zone, said first casing having an interior surface directly below said cylindrical interior surface that tapers downwardly and inwardly, said second flange having a plurality of circumferentially spaced transverse bores therein, with each of said bores being at least partially threaded and in communication with the interior of said first casing, the improvement for effecting both a primary and secondary seal between said first and second casings adjacent said first flange by a single manual operation and which primary and secondary seals allow said second casing to expand and contract longitudinally relative to said seal due to variations in the temperature of said second casing without destroying said seal, said improvement comprising:

a. a plurality of first and second resilient sealing rings;

b. a first rigid ring disposed in said annulus space adjacent said tapered surface of said first casing, said first ring having top and bottom surfaces, an outer side wall that tapers downwardly and inwardly at the same angle as said tapered surface, said outer side wall having at least one circumferential recess in which a first resilient sealing ring is disposed and that projects outwardly therefrom when not compressed, and an inner side wall that is partially defined by a second recess that extends downwardly from said top surface and terminates in a body shoulder, said second recess having a plurality of said second resilient rings disposed therein one above the other, and said second resilient rings when not compressed projecting outwardly from said first rigid ring;

c. a second rigid ring disposed in said annulus shaped space above said first rigid ring, said second ring having a first portion that slidably engages said cylindrical surface and a second portion that bears against the uppermost of said second resilient sealing rings;

d. a plurality of elongate force exerting members of transverse circular cross-section that have threads on at least a part of the exterior surfaces thereof that engage said threads in said transverse bores, with said force exerting member when rotated in a direction to move towards said first flange contacting said second ring and moving the latter downwardly, said second portion of said second ring as it moves downwardly bearing against the uppermost of said second sealing rings, said second sealing rings, first ring, and first sealing rings moving downwardly as a unit with said second ring, said first sealing rings being radially compressed into sealing engagement with said tapered surface as said outer side wall of said first ring moves downwardly relative thereto, said second sealing rings being radially deformed inwardly into slidable sealing contact with the exterior surface of said second casing by the downward force exerted thereon by said second portion of said second ring, and said first sealing rings at maximum compression when said outer side wall is in abutting contact with said tapered surface of said first casing.

4,327,805

METHOD FOR PRODUCING VISCOUS HYDROCARBONS

Robert S. Poston, Winter Park, Fla., assignor to Carmel Energy, Inc., Houston, Tex.

Filed Sep. 18, 1979, Ser. No. 76,587
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 **10 Claims**

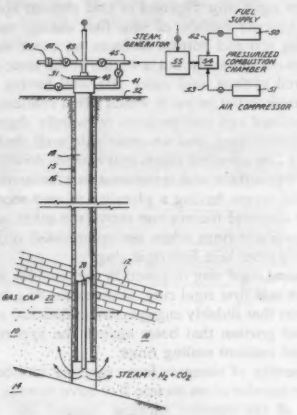
5. A method for recovering heavy viscous hydrocarbon crude oil from a subterranean formation having little bottom hole pressure which consists essentially of the steps of:

drilling multiple well bores to said formation and extending the well bores through the formation;

completing all of the well bores with a casing means extending to a lower portion of the formation such that the interior of the casing means communicates with the formation only in the lower portion of the formation having viscous minerals, including in said completions a tube extending through the casing and into the lower portion of the formation;

injecting into the lower portion of the formation through at least one well bore, said well bore becoming an injection well bore, at elevated pressure, a thermal vapor stream containing non-condensable gas to heat the formation, to reduce the viscosity of the minerals in the formation and to create a gas cap of non-condensable gas held by the casing means within an upper portion of the formation to increase formation pressures to drive the heated crude oil

having reduced viscosity towards and into well bores not being used for injection, said well bores being known as producing well bores; and,



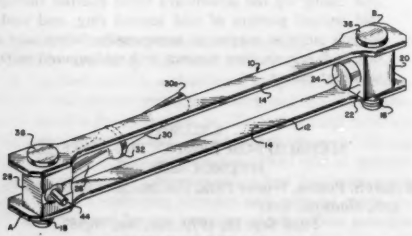
recovering the crude oil from the formation through the producing well bores.

4,327,806

OFFSET DRIVER ACCESSORY

Satya P. Arya, Somerville, N.J., assignor to Ingersoll-Rand Company, Woodcliffe Lake, N.J.

Filed Oct. 15, 1979, Ser. No. 84,668
Int. Cl.³ E21D *20/00*; B25D *17/00*
U.S. Cl. 173—131 **5 Claims**



1. An offset driver accessory, for inserting friction rock stabilizers in earth bores, comprising:

a rigid, elongate body of a given length, and of straight configuration from end to end thereof;

means at one end of said body, having a length of less than said given length, and having a directly-engaged mechanical connection with said body, for engaging an end of a friction rock stabilizer; and

means at the opposite end of said body, having a length of less than said given length, and also having a directly-engaged mechanical connection with said body, for receiving a friction rock stabilizer insertion tool, whereby upon any insertion forces being addressed to said receiving means, such forces are directly communicated to said body and, therethrough directly to said engaging means; and wherein

said body and said receiving means have centerline axes which define an acute angle therebetween; and

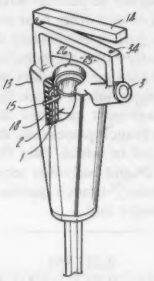
said engaging means comprises means fixed at said one end of said body which defines a land (1) for engaging an end of a friction rock stabilizer, and (2) for disposing a stabilizer, upon such being engaged with said land, at an angular inclination relative to said axis of said body.

4,327,807

PERCUSSION TOOL CASING

Henri Emonet, Montbrison-Loire, France, assignor to Maco-Meudon, France

Filed Sep. 19, 1978, Ser. No. 943,723
Int. Cl.³ B25D *9/04*
U.S. Cl. 173—134 **15 Claims**



1. A compressed air operated jack-hammer comprising:

a tube having an upper cylinder portion and a lower portion;

an air driven piston slidably disposed within said upper cylinder portion to transmit power to a tool;

a sleeve member fitted within said lower portion, said sleeve having a bore for receiving a tool;

a casting secured about said tube, said casting creating air passage means positioned between said cylinder portion and said casting;

a noise insulating, resilient casing enclosing said tube and said casting, said casing having a solid handle portion, said handle portion having a passage, said passage providing unobstructed access therethrough in a direction transverse to the plane of said solid handle portion; said casing adjacent the handle portion further having an opening which directly communicates both with said passage in the handle and said air distributing means; said handle portion further having means for controlling the supply of compressed air to the jack-hammer; and

means for distributing compressed air supplied to the jack-hammer, said distributing means being releasably mounted in said tube, said distributing means cooperating with said means for controlling the supply of compressed air and with said air passage means between said cylinder portion and said casting, so as to provide compressed air to said cylinder, thereby causing said piston to reciprocate and drive a tool disposed within the jack-hammer, said distributing means further being accessible through said passage in said handle portion of said casing.

4,327,808

AERODYNAMIC PROPELLER-DRIVEN LAND VEHICLE

H. Gordon Howard, 2470 S. Ivanhoe Pl., Holly Hills, Denver, Colo. 80222

Filed Jun. 19, 1979, Ser. No. 50,063
Int. Cl.³ B62D *57/04*
U.S. Cl. 180—7 P **2 Claims**

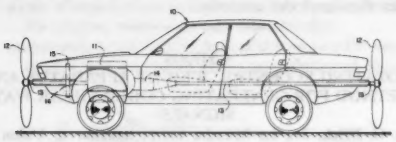
1. An aerodynamic propeller driven land vehicle, comprising:

an engine for propelling the vehicle;

a clutch connected to the output of said engine for disengaging the output;

a gear transmission connected to said clutch to provide a variable speed output from said engine;

a drive shaft connected to said transmission for rotation thereby extending longitudinally of the vehicle and terminating beyond the anterior and posterior of the vehicle; and



a pair of aerodynamic screw propellers mounted on said drive shaft, one at each terminus of said shaft;

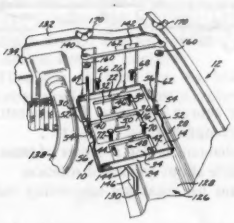
whereby standard differential gearing is unnecessary and any associated inertia and friction are minimized.

4,327,809

BATTERY TRAY

Michael Fenstermaker, Lynwood, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed Jun. 18, 1979, Ser. No. 49,394
Int. Cl.³ B62D *25/00*
U.S. Cl. 180—68.5 **7 Claims**



1. A battery tray for an automotive vehicle electrical storage battery comprising a solid rectangular floor having longer and shorter sides and upwardly directed retaining lips about the perimeter of said floor and said floor is contoured to form two shallow end wells and a shallow center well spaced longitudinally across said floor along the longer dimension thereof defined as the distance between said shorter sides, said pair of end wells and said center well being spaced apart each from the other for providing a floor portion therebetween to bear the weight of said battery and balance said battery when dynamic loads are applied thereto, and a pair of elongated slots are defined in each of said end wells parallel to said longer floor sides and transversely spaced from each other, and a circular aperture is defined between said elongated slots in each of said end wells, and at least one elongated transverse slot is defined in said center well, and the lips along said longer sides include bearing ledges adapted to receive and secure upright fastening poles.

4,327,810

TILTING CAB DEVICE FOR VEHICLES

Pedro R. Jorda, 83 Antonio Figueras, Tona (Barcelona), Spain

Continuation-in-part of Ser. No. 855,503, Nov. 28, 1977, abandoned. This application Oct. 9, 1979, Ser. No. 82,438
Claims priority, application Spain, Nov. 27, 1976, 453.731
Int. Cl.³ B62D *33/06*
U.S. Cl. 180—89.15 **2 Claims**

1. A device, for the hydraulic lifting and lowering of a cab pivoted to the chassis of a vehicle, comprising:

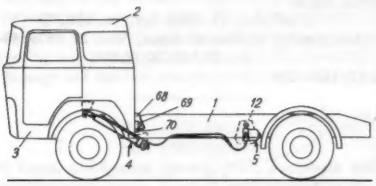
(i) a releasable mechanical locking means on the chassis arranged to lock the cab when the cab is fully lowered,

(ii) a hydraulic ram including a cylinder, and a piston slidable in said cylinder and dividing the cylinder space into first and second chambers of variable volume, one of said cylinder and piston being connected to the chassis, the other of said cylinder and piston being connected to the cab,

(iii) a pump for hydraulic liquid

(iv) a header tank for hydraulic liquid,

(v) a flow control valve and conduit means connecting said valve to the outlet of said pump, and to said header tank, and to said first and second chambers of the hydraulic ram, said control valve having a first position and a second position, said flow control valve in said first position providing a flow path for hydraulic liquid under pressure from said pump to said first ram chamber, for extension of the ram to raise the cab, and an exhaust flow path from said second ram chamber to the header tank, said control valve in said second position providing a flow path for



hydraulic liquid under pressure from said pump to said second ram chamber, for retraction of the ram to lower the cab, and an exhaust flow path from said first ram chamber to the header tank,

(vi) restrictor valve means, disposed in said exhaust flow path from said first ram chamber to the header tank, adapted normally to restrict flow of liquid in said exhaust flow path such that lowering of the cab under gravity is braked,

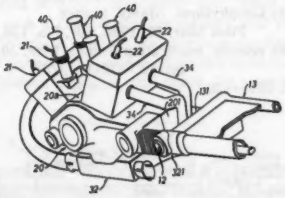
(vii) valve actuating means associated with said ram piston and arranged, when the piston is within a terminal portion of its movement in the direction to retract the ram, to open said restrictor valve means such that the remainder of the piston stroke is unrestricted and lowering of the cab under gravity is accelerated to facilitate locking of the cab in lowered condition by said locking means.

4,327,811

MOTORCYCLE EXHAUST SYSTEMS

Yoshiharu Isaka, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jan. 8, 1980, Ser. No. 110,468
Claims priority, application Japan, Jan. 18, 1979, 54-5441
Int. Cl.³ B62M *7/06*; F01N *7/08*
U.S. Cl. 180—219 **7 Claims**



1. In combination with a motorcycle of the type having a front frame portion mounting a front wheel and an engine, and a rear frame portion mounting a rear wheel, said portions being pivotally connected by a horizontally disposed pivot, said rear frame portion comprising a pair of laterally spaced-apart arms,

said engine comprising two banks of cylinders, one disposed forwardly of the other, an exhaust system comprising:

a front bank exhaust pipe extending from said front bank, downwardly and to the side of the said frame and rearwardly;

a rear bank exhaust pipe extending rearwardly and downwardly between the planes of said arms and between the rear portion of said engine and the pivot of said arms;

a muffler having a substantial lateral extent mounted to said frame at an elevation beneath that of said engine, all of said exhaust pipes discharging into said muffler; and

a tailpipe discharging rearwardly from said muffler.

4,327,812

REAR ARM BEARING STRUCTURE FOR MOTORCYCLE

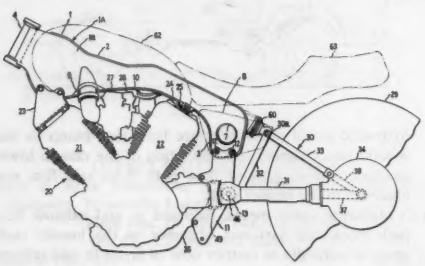
Nobuyoshi Tominaga, Hamamatsu; Nobuyoshi Kurai, Iwata; Hajime Ueno, and Sadahide Suzuki, both of Shizuoka, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 21, 1980, Ser. No. 132,373

Claims priority, application Japan, Mar. 29, 1979, 54-36296

Int. Cl.³ B62K *11/04*

U.S. Cl. 180—226 **5 Claims**



1. Rear arm bearing structure for a motorcycle of the type which has a frame with two laterally spaced-apart brackets, and a rear arm structure for supporting a rear wheel, said rear arm structure on one side of said motorcycle including a propeller shaft case enclosing a propeller shaft for driving said rear wheel and having a universal joint, and on the other side a rigid member, said bearing structure comprising: a bearing pipe fixed rigidly to said brackets and having an axis intersecting said universal joint, a pivot shaft inside said bearing pipe; bearing means between said bearing pipe and pivot shaft whereby said pivot shaft is rotatable around said bearing pipe axis; a bolt passing through said pivot shaft connecting said propeller shaft case and said rigid member to said pivot shaft for rotation therewith, said propeller shaft and case being disposed laterally outward from said bearing structure.

4,327,813

GENERATION OF SEISMIC SOURCES

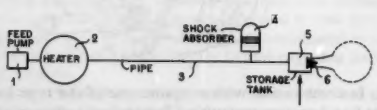
Michel G. Manin, Massy, France, assignor to Compagnie Generale de Geophysique, Massy, France

Filed Mar. 26, 1980, Ser. No. 134,157

Claims priority, application France, Mar. 30, 1979, 79 08022

Int. Cl.³ G01V *1/137*

U.S. Cl. 181—120 **10 Claims**



1. Method for creating a shock wave within a mass of water by the implosion of a vapour bubble, characterised by the fact that a controlled quantity of liquid water under pressure and which is super-heated relative to the mass of water is liberated quickly, at a predetermined point in the mass of water, so that the liberated water expands and vaporises as a single bubble, which then implodes suddenly.

4,327,814

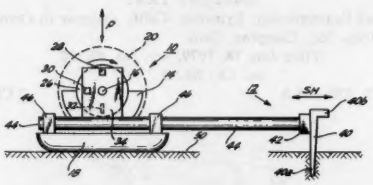
ROTATING ECCENTRIC WEIGHT APPARATUS AND METHOD FOR GENERATING CODED SHEAR WAVE SIGNALS

Otis G. Erich, Jr., La Mirada, Calif., assignor to Union Oil Company of California, Brea, Calif.

Division of Ser. No. 122,133, Feb. 19, 1980, which is a continuation-in-part of Ser. No. 956,613, Nov. 1, 1978, Pat. No. 4,234,053, which is a continuation-in-part of Ser. No. 765,799, Feb. 4, 1977, Pat. No. 4,143,737. This application Apr. 13, 1981, Ser. No. 253,100

Int. Cl.³ G01V *1/053, 1/153*

U.S. Cl. 181—121 **8 Claims**



1. A seismic source apparatus for generating coded shear wave signals, comprising:

a rotatable element having a center of mass displaced from and rotatable about an axis of rotation;

support means for rotatably supporting and rotatable element;

drive means for rotating said rotatable element about said axis of rotation; and

position sensor means comprised of first and second sensor elements, one of said sensor elements being an actuator and the other of said sensor elements being a first pulse generator which generates a discrete electrical pulse each time said first and second sensor elements pass in close proximity to each other, said first sensor element being rotatable about said axis of rotation at the same speed as said rotatable element and said second sensor element being supported by said support means at a first preselected position about said axis of rotation such that said first sensor element passes in close proximity to said second sensor element at and only at the instant at which the center of mass of said rotatable element passes that angular position about said axis of rotation at which said apparatus develops the peak shear force during each revolution of said rotatable element.

4,327,815

ROTATIONAL MECHANISM DISPOSED WITHIN FLUID PASSAGEWAY

Tetsuo Hattori, 212, Kaechi, Kanichommachi, Kanie-cho, Amagun, Aichi-ken, Japan

Filed Nov. 8, 1979, Ser. No. 92,281

Claims priority, application Japan, Nov. 13, 1978, 53-139573; Nov. 25, 1978, 53-145560

Int. Cl.³ F01N *1/08*

U.S. Cl. 181—225 **13 Claims**

1. A rotational mechanism disposed in a fluid passageway comprising:

a casing defining an interior chamber of spherical form;

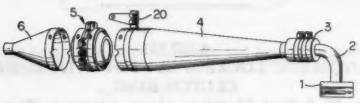
a pair of shafts respectively having an axial line passing through the center of said interior space and crossing each

other in a plane substantially perpendicular to the flow of said fluid;

the axes of said shafts defining an angle therebetween in said plane other than about 180°;

a pair of impellers respectively attached to said pair of shafts for rotation within said spherical chamber,

said impellers respectively having at least two flat vanes and at least two bent vanes alternately positioned to said flat



vanes, an edge of each bent vane being in sliding contact with a face of a flat vane on the other impeller, and all of said vanes being in sliding contact with the inside wall of said casing defining said spherical chamber,

whereby when said impellers are rotated, one bent vane of one impeller is abutted on one flat vane of the other impeller so that said interior space of said casing is partitioned by means of the contacting between the two kinds of said vanes.

4,327,816

ACOUSTIC LINER FOR ATTENUATING NOISE

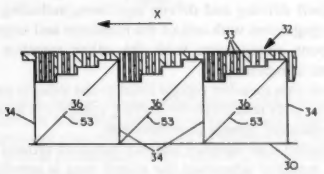
Stuart C. Bennett, Derby, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Apr. 28, 1980, Ser. No. 144,112

Claims priority, application United Kingdom, May 23, 1979, 17966/79

Int. Cl.³ E04B *1/82*

U.S. Cl. 181—292 **6 Claims**



1. An acoustic liner for attenuating noise, comprising a backing face, a perforated facing sheet, a wave guide assembly extending between the backing face and the perforated facing sheet to define a plurality of cells the portion of the perforated facing sheet associated with each cell having a non-uniform porosity and a further wave guide assembly inclined to the backing face and sub-dividing each cell.

4,327,817

METHOD AND APPARATUS FOR TREATING EXHAUST GASES PARTICULARLY FOR AIR-OPERATED TOOLS

Henry A. Scarton, Troy, N.Y.; Warren C. Kennedy, Pittsburgh, Pa., and Keith R. Gaylo, Syosset, N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Continuation of Ser. No. 951,034, Oct. 13, 1978. This application Apr. 11, 1980, Ser. No. 139,344

Int. Cl.³ F01N *1/08*

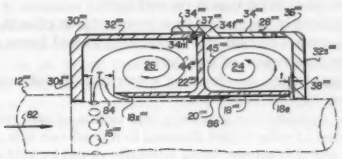
U.S. Cl. 181—296 **6 Claims**

1. A method of attentuating noise of gases leaving a gas venting device in a venting direction through at least one device discharge comprising:

providing an annular shell over the device discharge, which defines an annular chamber for receiving gases leaving the device, the shell having a wall portion adjacent the device discharge and extending substantially in the venting direction of the gases;

providing a constricted flow passage having an inlet communicating with said annular chamber and an outlet;

directing the gases leaving the device into the annular chamber to form the gases into an annular vortex path;



separating from said annular vortex path, in a flow separation area of the chamber adjacent the constricted flow passage inlet, a parted gas flow which departs from a direction of flow of gases in said annular vortex path; and

directing said parted gas flow through the constricted flow passage and out the constricted flow passage outlet.

4,327,818

SKY SHEPHERD 1

Brian Tepsa, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Feb. 7, 1980, Ser. No. 119,385

Int. Cl.³ A62B *1/12*

U.S. Cl. 182—238 **1 Claim**

1. A fire escape device, comprising in combination a frame and means for supporting said frame on a structure, including, a rotatable, horizontal shaft through said frame, a pair of spaced parallel drums affixed on said shaft, a cable wound oppositely on each said drum in further combination with a damping mechanism and a clutch, wherein said mechanism is mounted on one side of said frame and the clutch on the opposite side with the drums therebetween, said mechanism being operatively connected to said shaft, wherein said means comprise a support mounted within said structure and a cable supporting yoke pivotally mounted on said frame extending outward of said structure supporting said cables in further combination with a retainer for maintaining said yoke externally of said structure wherein said damping mechanism comprises a crank connected to said shaft further including hydraulic cylinder pistons engaging said crank for retardation purposes.

4,327,819

OBJECT DETECTION SYSTEM FOR A SHOPPING CART

John M. Coutta, 450 Superior Ave., Decatur, Ga. 30030

Filed Aug. 1, 1980, Ser. No. 174,678

Int. Cl.³ G08B *13/00*

U.S. Cl. 186—62 **5 Claims**

1. A retail merchandising system comprising:

a checkout counter;

a passageway adjacent to said counter and adapted to permit a basket cart to pass alongside said checkout counter;

a basket cart comprising:

a frame,

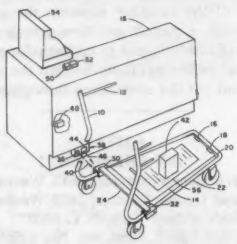
four wheels connected to and supporting said frame, and two rear wheels with fixed directivity and two front wheels with variable directivity;

an upper positioned basket on said frame;

a tray pivotally supported on a lower region of said frame and having a pivotal axis of coupling to said frame across a front end region of said cart;

spring bias means for elevating a rear end of said tray with respect to said frame;

a mirror coupled to a generally rear region of said tray and oriented to reflect light directed to it from one side of said cart, and said mirror being normally raised by said spring bias means;



a source of light positioned to one side of said passageway and adapted and oriented to direct a beam of light across said passageway and the path of a basket cart as it is moved along said passageway, and said beam being at an elevation such that with no weight provided by an object to said tray, said tray is biased upward by said bias means to an elevation wherein said beam will pass below said mirror;

light responsive means positioned adjacent to said light source and being oriented to receive said beam as a reflection from said mirror when said tray and said mirror are deflected downward by the weight of an object on the tray; and

signal means responsive to the output of said light responsive means for indicating the presence of an object on a said tray.

4,327,820

DISC BRAKE AND METHOD OF MANUFACTURING THE SAME

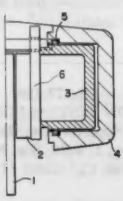
Haruhiko Nakayama; Kiyoshi Uchida; Masahiko Sugiyama, and Hiromu Konishi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Ishizuka Glass Co., Ltd., both of Aichi, Japan

Filed Feb. 1, 1980, Ser. No. 117,783

Claims priority, application Japan, Dec. 6, 1979, 54-158511

Int. Cl.³ F16D *65/02*

U.S. Cl. 188—370 **7 Claims**



1. A disc brake having a friction pad and a pair of pistons composed of a Devitroceramics comprising a heat conductivity of about 1×10^{-3} cal/cm.sec.°C. to about 4×10^{-2} cal/cm.sec.°C. and bending strength of about 5 kg/mm^2 to about 55 kg/mm^2, each said piston having a U-shape in cross section, the legs of said U having a reduced thickness at the ends thereof and terminating in a transverse distal surface, wherein each said piston contacts an element which is in contact with said friction pad only at said distal surface.

4,327,821

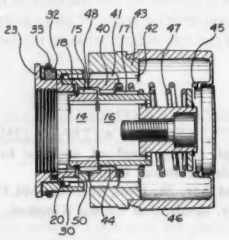
AUTOMATIC LOCKING CLUTCH WITH SLIDING CLUTCH RING

Thomas M. Telford, Gladstone, Oreg., assignor to Warn Industries, Inc., Kent, Wash.

Continuation-in-part of Ser. No. 88,165, Oct. 25, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,221

Int. Cl.³ F16D *1/06, 43/20, 45/00*

U.S. Cl. 192—35 **9 Claims**



1. In a vehicle clutch of the type having concentric and spaced apart driving and driven members, including a clutch ring in engagement with one of the members and urgeable into simultaneous engagement with the other member, the improvement comprising:

(a) a first cam member rigidly fixed to the vehicle and nonrotatable with respect to the driving and driven members for all rotational speeds therebetween;

(b) a second cam member slidably movable around said first cam member whenever the clutch ring is simultaneously engaged to the driving and driven members; and

(c) a cam follower abutting the clutch ring and in cam engagement with said first cam member and movable axially apart from said first cam member into a cammed engagement with said second cam member thereby urging the clutch ring into simultaneous engagement with the driving and driven member whenever the driving member rotates with respect to the driven member.

4,327,822

WEDGING-TYPE FREEWHEELING CLUTCH

Richard Vögele, Altlussheim, and Günter Lanzerath, Wieblingen, both of Fed. Rep. of Germany, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,589

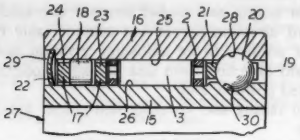
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758841

Int. Cl.³ F16D *41/07*

U.S. Cl. 192—41 A **7 Claims**

1. A wedging-type freewheeling clutch comprising an inner ring and an outer ring with wedging members arranged between the rings and retained in a double cage which is provided with axially extending centering means frictionally engaging one of the rings and which has a spring band located in the cage, the width of the inner and outer rings being greater

than the length of the wedging members, a plurality of ball bearings located between said rings, and a separate cage housing the ball bearings formed of plastic and having an inwardly directed slide rim.



4,327,823

CLUTCH RELEASE DEVICE

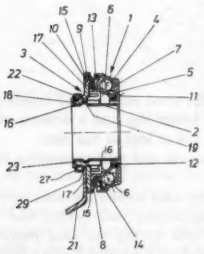
Leo Müller, Essleben, and Walter Köder, Schweinfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,375

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 7913673[U]

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—98 **4 Claims**



1. In a clutch release device wherein an antifriction bearing is positioned on a sliding sleeve and has a fixed bearing ring abutting pressure plate means, the fixed bearing ring being held axially as well as rotationally with respect to the pressure plate means, and wherein a clutch release lever is adapted to be releasably fastened to the pressure plate means by connecting means; the improvement wherein said connecting means comprises a holding ring positioned on an axially extending section of said pressure plate means said holding ring having a cylindrical surface with two diametrically opposite axially extending grooves, said pressure plate having a pair of recesses in said axially extending section for receiving projections of said clutch release lever, said grooves being positioned in front of said recesses of said pressure plate means, each of said grooves having two convergent resilient tongues formed thereon and extending from the base surface of the respective groove, the distance between the tongues being smaller than the width of the projections of said clutch lever.

4,327,824

CHEAT PREVENTING DEVICE FOR COIN MACHINES

Raymond W. Nicholson, Bensenville, Ill., assignor to Coin Mechanisms, Inc., Elmhurst, Ill.

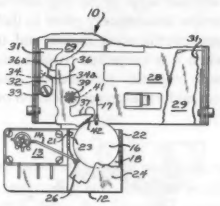
Filed Jun. 4, 1980, Ser. No. 156,280

Int. Cl.³ G07F *3/02*

U.S. Cl. 194—9 R **5 Claims**

1. In a testing apparatus for coins of given thickness and width dimensions, said device having a coin inlet, a coin outlet, passageway means for coins extending between said inlet and outlet, said passageway means including a portion adjacent said outlet which has thickness and width horizontal dimensions only slightly larger than the dimensions of the coin thereby confining such a coin as it moves downwardly through said portion, electric switch means having an actuating arm with a distal end in said portion to be contacted by a coin moving through said portion, said arm having a normal position at which it is in the path of downward movement of said coin through said portion with said coin then displacing the distal end downwardly to a displaced position at which the switch is actuated to signify the passage of the coin, said arm being returned to said normal position after the coin has passed with the switch means returning to its unactuated condition as the arm, in its return, reaches a location adjacent said normal position, and an anti-cheat device immediately above said portion to prevent a tethered coin which was descended sufficiently far through said portion to move said end to said displaced position from thereafter being raised to said location, said anti-cheat device being mounted for pivotal movement about an axis to permit a coin to move past is as the coin descends through the passageway means toward said portion, the improvement wherein said anti-cheat device comprises:

an L-shaped member having a generally upright leg with a lower end and a generally horizontal foot at said lower end of the leg, said leg and foot being positioned in a common plane, which plane is coincident with the thickness of the passageway means portion, said pivotal axis being above said foot, extending through said leg and being normal to said plane, said foot extending transversely from said leg into the path of downward movement of said coin, said leg remaining out of the path of downward movement of said coin.



4,327,825

CAPSULE POSITIONING GUIDE AND ASSOCIATED VACUUM MANIFOLD FOR CAPSULE ORIENTING MECHANISMS

Charles E. Ackley, Sr., Oreland, both of Pa., and Charles E. Ackley, Jr., Philadelphia, Pa., assignors to R. W. Hartnett Company, Philadelphia

Continuation of Ser. No. 905,742, May 15, 1978, Pat. No. 4,231,462. This application Feb. 11, 1980, Ser. No. 120,679

The portion of the term of this patent subsequent to Aug. 8, 1995, has been disclaimed.

Int. Cl.³ B65G *47/14*

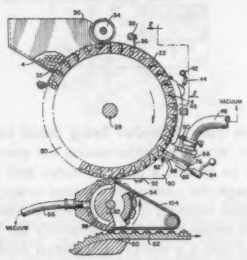
U.S. Cl. 198—380 **6 Claims**

1. In capsule orienting and turning apparatus, for orienting capsules having body portions and cap portions of greater transverse dimension than said body portions, including hopper means into which a multiplicity of said capsules are to be loaded, a continuously moveable capsule transporting conveyor having a plurality of pockets having generally upright pocket portions for receiving the capsules therein, said pockets being substantially equally spaced apart, each said pocket also having a capsule receiving substantially longitudinal pocket portion arranged to carry the capsule arranged substantially crosswise of the direction of its movement, means for moving said conveyor along a predetermined path with some of the capsules in a caps up attitude and others with a caps down attitude, tilting means for tilting the caps down capsules into an attitude arranged generally along said predetermined path,

means for substantially restraining said caps up capsules from such tilting movement while permitting said tilting means to tilt said caps down capsules, the improvement comprising:

(a) vacuum rectification means directed to draw vacuum transversely of said predetermined path and transversely of said tilted caps down capsules, as said caps down and caps up capsules are moved along said predetermined path and pass said vacuum rectification means, to rectify said capsules by shifting the cap portions of those capsules which are in a caps up position, and also the cap portions of those capsules which have been tilted by said tilting means, all into a direction so that the capsule axes are generally crosswise with respect to said predetermined path, and

(b) capsule positioning guide means for retaining each said capsule, whether cap up or cap down, in its respective pocket portion immediately prior to its being subjected to said vacuum rectification means and then releasing said capsule when it is subjected to said vacuum rectification means, said capsule positioning guide means being mounted on said vacuum rectification means adjacent said



transport conveyor and extending between said vacuum rectification means and said restraining means along the surface of said conveyor in which said pockets are formed, a portion of said positioning guide means more remote said vacuum rectification means and intermediate said hopper and said vacuum rectification means being sufficiently close to the surface of said conveyor to contact both cap up and cap down capsules traveling in said conveyor pocket thereby to maintain said capsules, whether cap up or cap down, in respective portions of said pockets in which said capsules reside while traveling thereby performing said retaining, the portion of said positioning guide means proximate said vacuum rectification means and intermediate said hopper and said vacuum rectification means being removed from the surface of said conveyor relative to said remote portion of said positioning guide means therby to permit release of said capsules from said respective pocket portions when said capsules are subjected to said vacuum wherein said vacuum rectification means draws said vacuum through an orifice in the portion of said positioning guide which is removed from the surface of the conveyor.

4,327,826

RECIPROCATING PUSHER CONVEYOR

Wilfred W. Wilson, Toronto, Canada, assignor to Ontario, Limited, Ontario, Canada

Division of Ser. No. 848,479, Nov. 4, 1977, Pat. No. 4,173,107. This application Nov. 2, 1979, Ser. No. 90,606

Int. Cl.³ B65G *25/02*

U.S. Cl. 198—740 **4 Claims**

1. Apparatus for repeatedly unloading limp, flaccid, easily deformable, uncooked sausages from a support table, comprising:

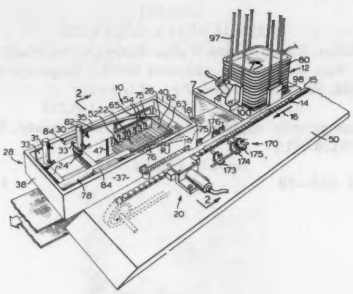
a support table having a low friction upper surface to permit movement of said sausages without blemishing said sausages;

a pusher member;

means for urging said pusher member alternately (a) in a forward direction across said support table from a retracted position to an unloading position and (b) in a rearward direction from said unloading position to said retracted position; and

means for raising and lowering said pusher member, comprising:

a cam track mounted adjacent said pusher member and said support table, said track including a lower leg substantially parallel to said support table, an upward



leg at the forward end of said lower leg, a return leg above said lower leg, and a downward leg joining the return and lower legs at the rear;

follower means on said pusher member for following said cam track;

a spring biasing said pusher member upward; and

means for supporting said spring and for altering the biasing of said spring on said pusher member, said means providing a greater biasing force of said spring when said pusher member is at said unloading position and when said follower means is at said forward leg of said cam track than when said pusher member is at said retracted position and when said follower means is at said return leg of said cam track.

4,327,827

VIBRATORY FEEDER

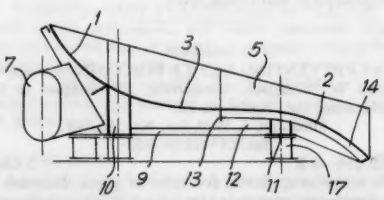
Antoni Jedo, Gliwice, and Waclaw Jachna, Tychy, both of Poland, assignors to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag", Gliwice, Poland

Continuation of Ser. No. 839,506, Oct. 4, 1977, abandoned. This application Apr. 19, 1979, Ser. No. 31,481

Claims priority, application Poland, Nov. 14, 1976, 193051

Int. Cl.³ B65G *27/04*

U.S. Cl. 198—771 **1 Claim**



1. A vibratory feeder possessing a transporting chute and a vibratory drive, connected with a supporting beam, located under a bottom of the chute and supporting elements, wherein

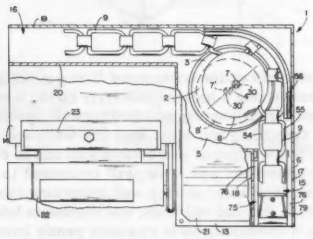
the improvement comprises having the bottom of the transporting chute concave on the inlet side and convex on the outlet side, and that a convex and a concave part is defined as a sector of a cylindrical surface, said bottom being further defined as being fastened to a supporting, eight bracket frame comprising eight cantilever project, which frame is formed of two lengthwise beams and two crosswise beams, a distance between axes of the lengthwise beams is equal to at least a half of mean width of the chute and the transporting chute seen from top is in the shape of a rectangle.

4,327,828

WEAR PLATE AND CORNER WHEEL MOUNTING ARRANGEMENT FOR AUTOMATED ANIMAL FEED CONVEYORS

William R. Williams, Roswell, Ga., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,403
Int. Cl.³ B65G *19/18*
U.S. Cl. 198—729 **19 Claims**



1. In a corner unit for automated animal feed conveyors and the like, comprising a housing including a corner with means supporting a wheel spaced from the walls of said corner and about which an endless feed carrier is guided between said wheel and said walls, the improvement of a wear plate and wheel mounting arrangement, comprising:

a wear plate having a generally regular shape with a geometric center;

a housing base adapted for supporting said wear plate thereon adjacent the walls and a corner area of said base;

a spindle rotatably mounting said wheel thereon;

means for mounting said spindle on said wear plate at a location eccentric to the geometric center of said wear plate, whereby rotation of said wear plate about its geometric center with respect to said housing base shifts said wheel between a first position spaced from said walls for accommodating a narrow feed carrier between said walls and said wheel, and a second position wherein a wider feed carrier can be accommodated between said walls and said wheel; and

means for rigidly attaching said wear plate to said housing base in one of said first and second positions as selected in accordance with the width of said feed carrier, thereby adapting said housing for use with either a narrow or a wide feed carrier.

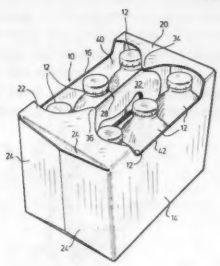
4,327,829

DISPLAY CARTON AND BLANK THEREFOR

Robert G. Hughes, Rexdale, Canada, assignor to The Continental Group of Canada Ltd., Toronto, Canada

Filed May 29, 1980, Ser. No. 154,429
Int. Cl.³ B65D *5/46*
U.S. Cl. 206—193 **13 Claims**

1. An end loading carton comprising an open-ended tubular casing having a pair of side walls, a bottom wall, and a pair of spaced apart top wall members defining a display opening therebetween, end wall closure flaps connected to opposite ends of said bottom and side walls, an end wall closure flap connected to an outer end of each top wall member, said end wall closure flaps being folded over to form end walls closing the casing ends, with said top wall members extending towards each other from said casing ends, a central vertical partition secured in said carton extending from said bottom wall to the underside of said top wall members, said partition having a slot therein to define a carrying handle below said top wall members with an upper portion of said partition, said partition extending between said casing ends and said bottom wall being formed by a bottom forming flap hingedly connected along a fold line to a first of said side walls and a bottom forming panel hingedly connected along a fold line to a second of said side walls, said bottom forming panel being hingedly connected along a fold line to said partition.

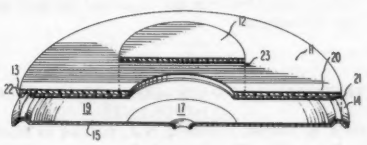


4,327,830

RECORD STAMPER PROTECTOR

Bhupendra P. Patel, and John J. Prusak, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1981, Ser. No. 230,358
Int. Cl.³ B65D *65/04, 85/57*
U.S. Cl. 206—303 **7 Claims**

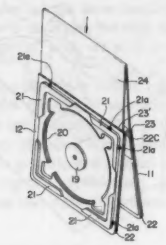


1. A device for protecting the molding surface of a record stamper of the type having a molding land around the outer circumference, a recorded area extending from and adjacent to the molding land to a predetermined point radially inwardly from the molding land and an unrecorded area extending from the predetermined point to a center hole in said stamper; said device comprising in combination: a recording cover and a center cover; said recording cover being an annular member having an outer diameter and an inner diameter; said outer diameter being sufficiently wide so that the outer edge of the recording cover can be sealable engaged by means of adhesive provided at an edge thereof to the molding land of the stamper and being of a width from the outer diameter to the inner diameter sufficient to cover the recorded area of the stamper, said center cover being of a size larger than the inner diameter of the recording cover and being releasably adhered to a surface of the recording cover over the inner diameter thereof, whereby when said recording cover is adhered to the molding land of the stamper it protects the recorded area of the stamper and when the center cover is applied over the inner diameter of the recording cover and sealed to the recording cover, the molding surface of the record stamper is protected from scratches and surface contamination.

4,327,831
DISK RECORD CONTAINER

Shosei Inaba, Yokohama, and Toshiro Okada, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jul. 2, 1980, Ser. No. 166,688
Claims priority, application Japan, Jul. 7, 1979, 54-93057[U]
Int. Cl.³ B65D 85/57, 85/30
U.S. Cl. 206—310 22 Claims



1. A disk record container comprising:

(a) a first plate having a top surface and a back surface, a first circular recess made on said top surface for receiving one side of a disk, and a first annular recess made on the bottom of said first circular recess;

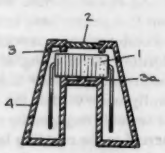
(b) a second plate having a top surface and a back surface, a second circular recess made on said top for receiving the opposite side of said disk, and a second annular recess made on the bottom of said second circular recess; and

(c) a sheet made of substantially transparent film for connecting said first and second plates to each other in such a manner that said disk will be sandwiched between said first and second plates, said sheet substantially covering the back surfaces of said first and second plates and being secured to each of said first and second plates to thereby form an outwardly facing pocket between said sheet and the back surface of said first plate, and another outwardly facing pocket between said sheet and the back surface of said second plate.

4,327,832
CONTAINER FOR PACKAGING SEMICONDUCTOR COMPONENTS

Mario A. de Matteo, Plainfield, N.J., assignor to Thielex Plastics Corporation, Piscataway, N.J.

Filed Jun. 26, 1980, Ser. No. 163,064
Int. Cl.³ B65D 85/42, 65/18; H05F 3/02
U.S. Cl. 206—328 4 Claims

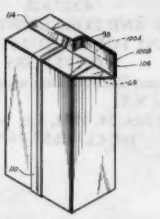


1. A container for packaging a stack of electronic components requiring EMI shielding, said container comprising an elongated tube adapted to longitudinally contain the stack, said tube having a body portion made of electrically conductive opaque plastic so as to provide said shielding and a longitudinally extending windowpane portion made of electrically non-conductive transparent plastic so as to permit inspection of the components when in said tube, said body portion integrally forming electrically conductive plastic internal projections positioned so as to prevent said components from contacting said windowpane portion.

4,327,833
LIQUID TIGHT POURING CARTON

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 10, 1979, Ser. No. 101,713
Int. Cl.³ B65D 5/74
U.S. Cl. 206—621 24 Claims



1. A liquid tight carton constructed from a structural carton material, and having a heat sealable layer on the inner surface thereof, said carton comprising: a bottom wall, upstanding side walls and upstanding end walls, said side walls and end walls connected to the edges of said bottom wall and to each other to form a receptacle; and a top wall connected to said side walls and said end walls; said top wall comprising extensions of said side walls and said end walls; said extensions being joined together and comprising main extension panels joined to said side walls and said end walls, and sealing margins on the edge of each said extension remote from said side walls and said end walls; said sealing margins being joined together in the form of a fin seal, producing a fin having multiple thicknesses of said structural carton material joined together on the top of said carton, said seal having an outer edge disposed toward the outer edge of said fin and an inner edge disposed toward the interior of said carton; each said thickness of structural carton material having a structural line of weakness substantially on said inner edge of said seal and extending along said fin from substantially one end thereof to a point short of the other end of said fin, said structural lines of weakness being disposed within said structural carton material; said heat sealable layer being devoid of said structural lines of weakness and serving as an effective barrier against leakage of product which may be contained in said carton; said structural lines of weakness on opposing thicknesses of carton material being in substantial registry with one another, forming an easily removable section of the wall, wherein said margins comprising said fin have a tab connected thereto on said one end of said fin; said structural line of weakness on each said thickness of structural carton material being disposed between said tab and said margin, said tabs being joined to each other, and comprising said easily removable section of the top wall; said sealing margins on said one end of said fin being substantially free of seals between one another; the top of said carton having a substantially continuous seal along the entire length thereof.

4,327,834
DOCUMENT RETRIEVAL SYSTEM

Robert J. Kalthoff, Cincinnati, and Paul J. Neumeier, Loveland, both of Ohio, assignors to O. K. Partnership, Cincinnati, Ohio

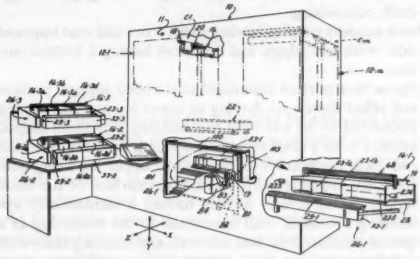
Filed Aug. 1, 1980, Ser. No. 174,458
Int. Cl.³ B07C 5/36
U.S. Cl. 209—609 23 Claims

1. Apparatus for selecting, removing and storing at least one desired document selected from among a plurality of undesired documents, comprising:

a plurality of generally planar documents each having oppo-

site faces, each said document encoded along at least one sorting edge to facilitate distinguishing said documents from each other, said documents each having a leading edge disposed transversely to said at least one sorting edge, said documents each also having a trailing edge opposite said leading edge and a length measured between said leading and trailing edges,

a document selector in which said coded documents are randomly positionable in a deck in registry in face-to-face relation at a sort position with their respective sorting and leading edges aligned, said leading and sorting edges of said aligned and registered documents when in said sort position in said deck collectively defining leading edge and sorting edge planes, respectively, said document selector including sorting elements proximate said sorting edge plane and cooperable with said document sorting edges to select at least one desired document from said plurality of documents in said deck and advance it forwardly relative to said deck in a direction parallel to its



sorting edge to a selected document position whereat its leading edge is displaced forwardly of said leading edge plane a preset distance less than said length of said document, said leading edge of said selected document lying in a selected document leading edge plane disposed parallel to said leading edge plane and forwardly thereof by a distance equal to said preset distance,

selected document removal and storage means mounted for movement along a traversing path in a direction parallel to said leading edge plane, said selected document removal and storage means having a temporary document storage zone therein, said selected document removal and storage means further having a document removal assembly thereon engageable with a selected desired document located at said selected document position for fully removing said at least one selected desired document engaged therewith from said deck and transferring it to said temporary storage zone, and

drive means for moving said selected document removal means along said traversing path.

4,327,835

UNIVERSAL SNAP-IN CARD GUIDE FOR PRINTED CIRCUIT CARD ENCLOSURES

Laurie J. Leger, Bradford, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 10, 1980, Ser. No. 110,880

Int. Cl.³ A47G *19/08*; B42F *17/16*; H02B *1/02*

U.S. Cl. 211—41 **25 Claims**

1. A Printed circuit card enclosure and guide assembly comprising:

A. a pair of horizontally spaced end plates;

B. a pair of vertically spaced shelf means connected to said end plates;

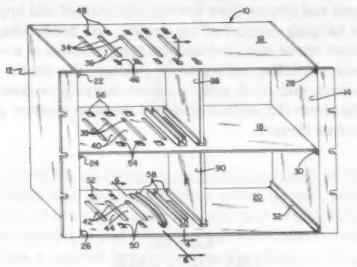
C. a plurality of pairs of rectangular apertures in said shelf means;

D. a plurality of card guides, each end of each of said card guides, including a snap clip and an aligning peg snapped into one aperture of one of said pairs of rectangular apertures, the size and position of said snap clips and aligning pegs on said card guide and size and postion of said rectangular apertures in said shelf means being such as to rigidly retain said snap clip and aligning peg in said rectangular apertures, wherein said aligning peg prevents the lateral and longitudinal movement of said card guide with respect to said shelf member;

E. each of said card guides having a base and a pair of vertical sides forming a U-shaped cross-section channel for retaining one edge of a printed circuit card;

F. said base, except for said snap clip and aligning peg, hang an essentially flat surface;

G. each of said card guides being composed of a material which is sufficiently flexible such that said card guides



may be bowed to allow the insertion of said snap clip and aligning peg into said rectangular apertures and sufficiently resilient to return said essentially flat surface of said base to an essentially flat shape after insertion, said snap clip comprising:

i. a riser formed at a right angle to said essentially flat surface of said center portion; and,

ii. a clip ear formed at a right angle to said riser to form an L-shaped clip and wherein said L-shaped clips at each of said end portions are oppositely disposed such that the tips of said clip ears extending away from said risers are at the extreme ends of said card guide, and wherein said snap clip can flex toward said aligning peg when said card guide is snapped into said rectangular aperture and sufficient resilient to return to the unflexed position and thereby retain said card guide to said shelf means.

4,327,836

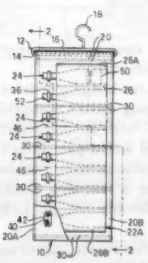
PORTABLE BOTTLE STORAGE DEVICE

Benjamin T. Okuno, 405 Leota Ave., Sunnyvale, Calif. 94086

Filed Sep. 24, 1979, Ser. No. 78,290

Int. Cl.³ A47F *7/28*

U.S. Cl. 211—74 **11 Claims**



1. A portable storage device for the storage of bottles of wine, or the like, on their sides, said device comprising

a main member comprising a sheet of flexible material,

supporting means for hanging support of said main member in a generally vertical plane, said supporting means including spaced upper and lower rigid horizontally extending rods interconnected at front and rear ends thereof to form a closed loop, a portion of said main member extending over the lower rod for hanging support of the main member therefrom, and

side members comprising sheets of flexible material attached to opposite sides of said main member and forming generally horizontally extending container-carrying pockets with said main member at opposite sides thereof for the storage of bottles, or the like, in a generally horizontal position therewithin,

said supporting means also including a hook attached to said upper rod intermediate the opposite ends of said upper rod for hanging support of the device, said hook being positioned above said container-carrying pockets at a vertical plane extending substantially through the center of the pockets, said hook and container-carrying pockets being offset from the vertical center of the main member toward the rear thereof.

4,327,837

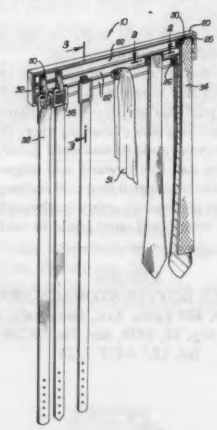
HANGING RACK

Paul C. Ross, 7776 Via Rosa Maria, Burbank, Calif. 91504

Filed Aug. 18, 1980, Ser. No. 178,876

Int. Cl.³ A47F *5/08*

U.S. Cl. 211—87 **6 Claims**



1. A hanging rack device comprising:

a generally elongated base;

at least one means for hanging articles such as neck ties and belts, said hanging means comprising a closed loop of flexible material with an outer surface which is at least partially covered with a pile surface for engaging hooked projections on an attachment means, said hanging means further including a fastening means for permitting said closed loop of flexible material to be selectively opened; and

attachment means fixedly secured to said base for detachably securing said hanging means, said attachment means comprising one or more strips of material containing hooked projections for selectively engaging said pile surface on said hanging means.

4,327,838

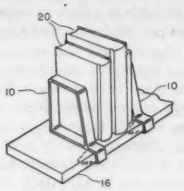
CLIP-ON BOOK END

John E. Cooke, 2295 Willow Ln., Lakewood, Colo. 80215

Continuation-in-part of Ser. No. 909,639, May 26, 1978, abandoned. This application Feb. 22, 1980, Ser. No. 123,756

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—184 **7 Claims**



1. A clip-on book end of the type adapted to engage the edge of a shelf, comprising:

a book support portion having a top, front and rear opposed sides with end edges, and a bottom having a bottom surface;

a clip-on base portion connected to the book support portion and offset therefrom, having an upper leg and a lower leg connected by an end wall and defining a channel shaped passage with a shelf-receiving opening opposite from the end wall, the bottom surface of the upper leg being substantially coplanar with said bottom surface of the book support portion, and further having a substantially upstanding abutment wall connected to the lower leg at a spaced position from said end wall and defining therewith a flange-receiving gap, said abutment wall being connected to a connecting segment angling upwardly and away from the end wall and supporting a gripping segment having an upper gripping surface that, with the clip is in unflexed condition, lies between the planes of the book support portion bottom surface and lower leg upper surface, said gripping segment and at least a portion of said connecting segment extending laterally symmetrically beyond said end edges of the book support portion, the base portion further having a sliding insert filler means the horizontal length of said flange receiving gap to closely engage, in use, the edge flange of a shelf formed from sheet material; and

wherein the book support portion and base portion are formed from a flexible and resilient material enabling the connecting segment and gripping segment to be spread from the book support portion bottom wall when, in use, a shelf is being received therebetween, and enabling the connecting segment and gripping segment to apply sufficient resilient gripping force, in combination with the book support portion bottom surface, to urge the book support portion toward a substantially upright position on the shelf against lateral loading of the book support portion.

4,327,839

WEAR MEMBER FOR RAILWAY VEHICLE AND METHOD OF MAKING SAME

Donald L. Kleykamp, Dayton, Ohio, and Julien C. Mathieu, Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio

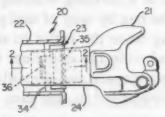
Filed Jul. 21, 1980, Ser. No. 170,501

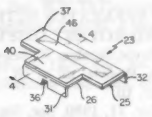
Int. Cl.³ B61G *9/22, 7/10*

U.S. Cl. 213—61 **20 Claims**

1. In a wear member for a railway vehicle wherein said vehicle comprises a pair of relatively movable components and said wear member is supported by one of said components and protects said components from wear during relative movement thereof; said wear member comprising a metal support having a continuous supporting surface; an ultra high molecular

weight polymeric material supported by said metal support and having an antifriction wear surface engageable by said other component; and means attaching said polymeric material to said metal support; the improvement comprising, comparatively rigid load-carrying means embedded within said polymeric material, said load-carrying means having inner surface means thereof engaging said continuous supporting surface and outer surface means thereof disposed substantially coplanar with said wear surface, said load-carring means having





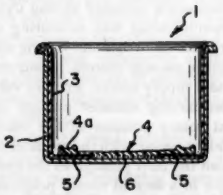
peripheral side surface means extending between said inner and outer surface means thereof and being engaged by said polymeric material completely around said entire peripheral side surface means so that said load-carrying means is completely surrounded at said peripheral side surface means thereof by said polymeric material, said load-carrying means serving to maintain said polymeric material free of substantial indentation under conditions of high impact loads applied simultaneously against said load-carrying means and said polymeric material.

4,327,840

METAL CAP AND ITS METHOD OF MANUFACTURE

Fumio Mori, and Kazuhisa Ishibashi, both of Yokohama, Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 39,119, May 15, 1979, Pat. No. 4,272,313.
This application Oct. 29, 1980, Ser. No. 202,343
Claims priority, application Japan, May 26, 1978, 52-62305
Int. Cl.³ B65D *41/02, 53/04*
U.S. Cl. 215—349 **3 Claims**



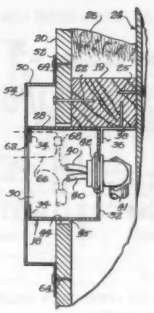
1. In a metal cap having a primer layer thereon covering the entire bottom surface thereof and a lining layer the underside of which overlies and completely contacts said primer layer and where the cap is adapted for sealing the open ends of containers; the improvement comprising in that said primer layer has a thermal adhesiveness with respect to said lining layer upon the heating of the cap and in that only a part of the lining layer at the bottom of the cap is thermally adhesively affixed to said primer layer.

4,327,841

INSULATED OUTLET COVER

Joseph Wimberly, 637 Belden, Elmhurst, Ill. 60126

Filed Oct. 17, 1980, Ser. No. 198,521
Int. Cl.³ B65D *25/24*
U.S. Cl. 220—18 **10 Claims**



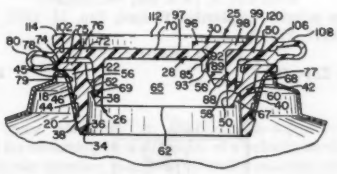
1. A cover for covering an outlet box mounted on an exterior building wall and for affording access thereto, said cover being formed of a single piece of plastic and having a flat outer wall and opening in said flat outer wall to provide access to the outlet box, a surrounding wall integrally joined to the periphery of said flat outer wall and extending substantially normal thereto, and an integrally joined attaching flange connected to the inner end of said surrounding wall for being placed against the building wall and being fastened thereto, said attaching flange being a continuous flange about the entire periphery of said cover.

4,327,842

CONTAINER AND CLOSURE THEREFOR

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,227
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—367 **12 Claims**



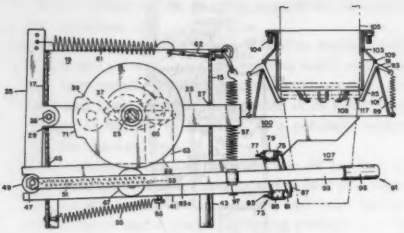
1. A closure for a container having a neck part and a closure part including a plastic deflectable plug part insertable in said neck part for closing a pour opening in the neck part, and a vent assembly, said vent assembly in the closed position rigidifying said plug part to resist removal thereof from the neck part,

said vent assembly including separable parts attendant on separation to open said vent assembly preparatory to opening of said closure for accommodating flexure of said plug part and thus facilitating release of the plug part from the neck part.

4,327,843
CUP DISPENSING MECHANISM

Dewey A. Corley, Rte. 9, Sevierville, Tenn. 37862

Filed May 27, 1980, Ser. No. 153,051
Int. Cl.³ B65G *59/00*
U.S. Cl. 221—210 9 Claims



1. A cup dispenser for removing a single cup from a stack of nested cups, which comprises:

a frame;

a hopper for receiving the stack of cups;

displaceable support means secured to the hopper for engaging a lowermost cup of the stack and thereby supporting the stack of cups in the hopper;

a first jaw unit and second jaw unit positioned in an opposed and cooperating postion adjacent to the hopper for grasping the lowermost cup, the jaw units being characterized by means mounting them to permit the flexible adjustment of their contours to the circumferential contour of the lowermost cup when the cup is grasped by the jaw units;

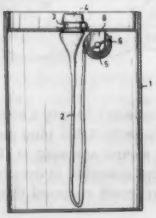
jaw operating means supported by the frame and atached to the jaw units for sequentially moving the jaw units toward and away from each other to grasp and then release the lowermost cup; and

elevating means supported by the frame and attached to the jaw units for moving the jaw units away from the hopper to pull the lowermost cup from the influence of the support means while the lowermost cup is grasped by the jaw units, and for returning the jaw units toward the hopper when the lowermost cup is released by the jaw units.

4,327,844
COLLAPSIBLE TUBE-TYPE PACKAGE FOR PASTELIKE SUBSTANCES COMPRISING A RIGID CONTAINER AND AN INNER FLEXIBLE BAG

Stanislaw Gratschew, 2 kp, 37500 Lempäälä, Finland

Filed Jan. 4, 1978, Ser. No. 866,879
Claims priority, application Finland, Jan. 13, 1977, 770101; Jun. 3, 1977, 771770
Int. Cl.³ B65D *35/34*
U.S. Cl. 222—100 4 Claims

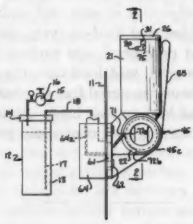


1. A package especially for pastelike substances comprising a rigid container having wall means which define an interior space and also define an opening, a filling and dispensing device secured in said opening and defining a passage extending between said interior space and the exterior of the container, a flexible bag of tubular form disposed in said interior space and having an open end which is secured to said filling and dispensing device whereby said passage establishes communication between the interior of the bag and the exterior of the container, said bag also having a closed end, and a roller which is rotatably mounted on said container close to the filling and dispensing device and is secured to the closed end of the bag, the bag being in a flattened condition and devoid of pastelike substance and a part of it forming windings around said roller whereby on filling the bag by way of said passage the bag may expand by unwinding from the roller to substantially fill said interior space, and wherein the container is formed with ears extending in said interior space and the roller is mounted on the container by being journalled in said ears.

4,327,845
DISPENSING APPARATUS WITH DISCHARGE ASSISTANT AND ROTARY DISPENSING VALVE

Richard M. Keyes, Davis; Stephen W. Schwitters, Rockford, and William R. Baillie, Roscoe, all of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Mar. 31, 1980, Ser. No. 135,491
Int. Cl.³ G01F *11/02;* B65D *88/54*
U.S. Cl. 222—340 6 Claims



1. A dispensing apparatus for dispensing measured quantities of material from a pressurized supply source, the dispensing apparatus comprising a housing including a measuring cylinder having an end wall at one end and open at its other end and a valve cylinder extending crosswise of said one end of said measuring cylinder and open at both ends, a piston slidable in said measuring cylinder, a cap mounted on said open other end of the measuring cylinder, and a coil compression spring interposed between the cap and the piston yieldably urging said piston toward said one end of the measuring cylinder, said one end wall of said measuring cylinder having cylinder passage means therein communicating said measuring cylinder with said valve cylinder, said valve cylinder having an inlet passage therein and a discharge passage therein, means connecting said inlet passage with said supply source, a rotary valve member in said valve cylinder having transfer passage means therein operative in a first rotary position of the valve member to communicate the inlet passage with the cylinder passage means to pass material from the inlet passage to the cylinder passage means and operative in a second rotary position of the valve member to communicate the cylinder passage means with the discharge passage, said valve member having a flange on one end engageable with one end of the valve cylinder and a shaft extending axially from its other end, an operating handle for moving the valve member between said first and second positions, said handle having a hub at one end and means for non-slidably and non-rotatably connecting the hub to said shaft on the valve member, said hub having an annular skirt portion extending toward the valve cylinder and terminating in an end face engageable with the other end of the valve cylinder, and a coil type torsion spring disposed within said skirt portion and having one end anchored to the hub and the other end an-

chored on the valve cylinder for yieldably urging the rotary valve member to one of said positions thereof.

4,327,846

APPARATUS FOR SUPPLYING COOLING AND/OR POLISHING LIQUIDS, MORE ESPECIALLY FOR USE IN MACHINES FOR GRINDING AND/OR POLISHING OPTICAL LENSES

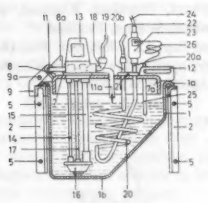
Franz Starp, Wildbad, Fed. Rep. of Germany, assignor to Prontor-Werk Alfred Gauthier GmbH, Calmbach, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,226

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813091

Int. Cl.³ B67D *5/40*

U.S. Cl. 222—382 15 Claims



1. Apparatus for supplying cooling and/or polishing liquid to a processing station, such as for use in machines for grinding and/or polishing optical lenses, comprising

a supporting frame adapted to be located at the side of a machine with which it is to be used,

a storage container removably insertable in the frame and having a container opening,

a cover for the container having side edge regions and a downwardly depending outer perimetric edge, and supporting thereon a discharge pipe for the liquid and a device for conveying the liquid from the container through the pipe for conducting the liquid to a processing station,

stationarily arranged and pivotally coacting hinge joints stationarily pivotally mounting the cover on the frame, for pivotal movement of the cover along a fixed path about a stationary pivot axis stationarily arranged on the frame between a closure position in relation to the container and a correspondingly opposite open position remote from the container opening,

the container having inside perimetric dimensions at the container opening and the outer edge of the cover having corresponding outer perimetric dimensions and the outer perimetric dimensions of the edge of the cover being smaller than the inside perimetric dimensions of the container to provide a clearance gap therebetween when the cover is at the closure position and to provide open communication between the container interior and the container exterior through such clearance gap when the cover is in the closure position, and

individual spaced apart stops arranged at the side edge regions of the cover for limiting the pivotal angle of movement of the cover between the closure position in relation to the container and the correspondingly opposite open position remote from the container opening.

4,327,847

SLIDING GATE NOZZLES

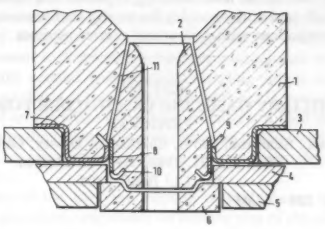
Bernhard J. Tinnes, Zollikerberg, Switzerland, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,754

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1977, 2733665

Int. Cl.³ B22D *41/08, 41/10*

U.S. Cl. 222—591 9 Claims



1. An interchangeable refractory wearing part having at least one flow aperture for molten metal consisting of refractory concrete reinforced with a metal reinforcement surrounding said aperture, a surrounding portion of the reinforcement being disposed on a wearing surface of said part remote from the flow aperture, said reinforcement disposed on a wearing surface being in the form of a ring axially disposed of said part and has tangentially projecting resilient tongues adapted to center and position the wearing part.

4,327,848

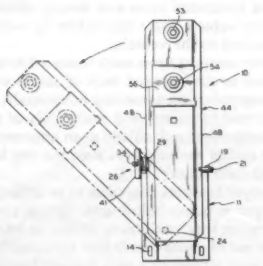
SWING DOWN SPARE WHEEL TIRE CARRIER

Raywood C. Weiler, 17586 Vine St., Fontana, Calif. 92335

Filed Apr. 25, 1980, Ser. No. 143,972

Int. Cl.³ B62D *43/02*

U.S. Cl. 224—42.06 7 Claims



1. A spare wheel carrier comprising a support member adapted for mounting on the bumper of a vehicle, an elongated wheel carrier member, means for pivotally securing said wheel carrier member at its lower end to said support member, said wheel carrier member including means for mounting a vehicle wheel thereto, and being arranged to be swung in a plane parallel to said support member between a vertical upper position corresponding to the stored position of the vehicle wheel and a lowered position in which the carrier member is disposed in angular relation to said support member and in which the wheel is rested on a ground surface so that the wheel may be mounted on or dismounted from the carrier member without lifting the wheel, an abutment member carried on said support member and adapted to be engaged by said wheel carrier member when the carrier member is disposed in the vertical upper position, said pivotal securing means pivotally

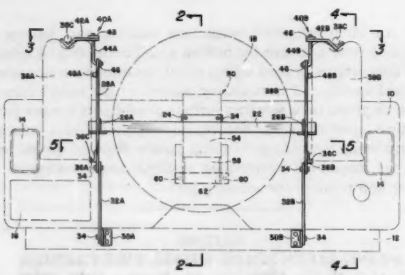
securing said wheel carrier member to said support member at a point offset from the longitudinal center of the carrier member such that the carrier member is normally urged into engagement with the abutment member when the carrier member is disposed in the vertical upper position, and a latching mechanism selectively engageable with said wheel carrier member to lock the carrier member in the vertical upper position, said latching mechanism including an L-shaped rod having a vertical leg pivotally supported on said support member and a horizontal leg, a retaining member having an aperture through which the horizontal leg is passed and means cooperating with said horizontal leg for urging said retaining member into engagement with said wheel carrier member.

4,327,849

AUXILIARY GASOLINE CAN HOLDER FOR JEEP VEHICLES

Norman L. Sharpton, 103 S. Chickasaw, Dewey, Okla. 74029

Filed Jul. 31, 1980, Ser. No. 174,246
Int. Cl.³ B60R *9/06*
U.S. Cl. 224—42.03 A **2 Claims**



1. For use on the rear end of a vehicle having a rear bumper extending thereacross and above the bumper a spare tire holder, an auxiliary gasoline can holder comprising:

an elongated horizontal cross arm having means for attachment to the vehicle spare tire holder by which the cross arm is secured to the vehicle;

a pair of short support arms each being affixed at the inner end thereof to the opposed ends of said horizontal cross arm, the support arms extending horizontally and perpendicular to said cross arm and rearwardly of the vehicle;

a vertical can holder back affixed at an intermediate point to the outer end of each support arm, the can holders being parallel to each other;

a pair of bumper brackets adaptable to be affixed to a vehicle rear bumper at points below said vertical can holders;

a pair of support legs, each being affixed at its upper end to the lower end of a said cam holder back and the lower end of each being affixed to a said bumper bracket, said support legs being thereby inclined in a common plane upwardly and rearwardly from said bumper brackets; and

means on each said can back to secure a gasoline can thereto whereby the cans are held uprightly and spaced apart from each other and on opposite sides of the vehicle spare tire mount.

4,327,850

GAME SLING APPARATUS

George J. Robinson, Jr., R.R. #1, Box 18, Floris, Iowa 52560

Filed Dec. 8, 1980, Ser. No. 214,245
Int. Cl.³ A45F *3/00*
U.S. Cl. 224—103 **6 Claims**

1. Apparatus for moving animals which comprises:

a shoulder sling having first and second ends;

a secondary strap dimensioned and configured for extending around the chest and back of the user and having first and second ends, said first and second ends of said secondary strap being respectively joined to said first and second ends of said shoulder sling;

first and second ring shaped members carried on said sling respectively at said first and second ends of said sling;

first and second gambrells carried on discrete lanyards fixed to said first ring shaped member; and

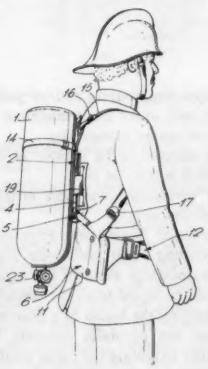
third and fourth gambrells carried on discrete lanyards fixed to said second ring shaped member.

4,327,851

BACK-CARRYING HARNESS ASSEMBLIES

Leonard J. Feathers, Henfield, England, assignor to Chubb Panorama Limited, Sussex, England

Filed Sep. 12, 1980, Ser. No. 186,801
Claims priority, application United Kingdom, Sep. 12, 1979, 31693/79; Nov. 30, 1979, 41338/79
Int. Cl.³ A45F *3/00*
U.S. Cl. 224—211 **13 Claims**



1. A back-carrying harness assembly for supporting a load on the back of a user, comprising a rigid part which in use is arranged to lie against the back of the user; a carrier for the load hinged to said rigid part about a generally transverse axis in the region of the user's shoulder blades; and further harnessing including at least shoulder straps which are attached to said carrier at a position above the said hinge.

4,327,852

BACKPACK HARNESS

Harvey P. Gibson, 11514 Hillside La., Mequon, Wis. 53209

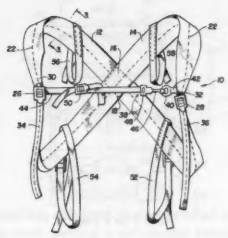
Filed Aug. 22, 1980, Ser. No. 180,458
Int. Cl.³ A45F *3/00*
U.S. Cl. 224—214 **9 Claims**

1. A lightweight flexible compact backpacking harness capable of being worn under conventional outer coats or folded and carried in a pocket when not in use, the harness comprising, in combination,

a pair of elongated flexible shoulder straps crossed and

permanently joined together at a fixed point intermediate their ends with the fixed point being in an area to be disposed on the back of a person wearing the harness,

said shoulder straps having upper end portions extending in an upwardly diverging relation from the fixed point to extend one over each shoulder from the back to the chest of a person wearing the harness and lower end portions extending in a downwardly diverging relation from tne fixed point to extend one around each side and upwardly in front of the person,



fastener means on one end portion of each shoulder strap for securing the lower end of each shoulder strap to the upper end of the other shoulder strap in the area of the chest of a person wearing the harness,

chest strap means adapted to extend across the chest of a person wearing the harness to releasably join the shoulder strap, and

a plurality of elongated flexible tie members separately and permanently attached intermediate their ends to each of said shoulder straps, said tie members each being positioned and adapted to secure articles to be carried on the back of a person wearing the harness.

4,327,853

FOLDABLE PACK BELT

Brian J. Adams, 17 Elliewood Ave., Charlottesville, Va. 22903

Continuation-in-part of Ser. No. 38,945, May 14, 1979, Pat. No. 4,244,499. This application Jan. 12, 1981, Ser. No. 224,485

Int. Cl.³ B65D *30/10, 33/24*

U.S. Cl. 224—224 **16 Claims**

1. A foldable pack belt for carrying at least one article comprising:

a substantially planar member having first and second longitudinally-extending edges interconnected by first and second transversely-extending edges;

first complementary fastening means having a first component associated with said first longitudinally-extending edge and a second component associated with said second longitudinally-extending edge, said first component having a portion thereof selectively releasably engaged by said second component to releasably and adjustably interconnect said first and said second longitudinally-extending edges to each other so that the size of a carrying portion of the pack belt is adjusted whereby a first compressive force is exerted on an article to be carried when longitudinally-extending edges of said planar member are folded about a longitudinally-extending axis and interconnected to each other to encompass the article; and

second complementary fastening means having a first component associated with said first transversely-extending edge and a second component associated with said second transversely-extending edge, said first component of said second complementary fastening means having a portion thereof selectively releasably engaged by said second component to adjustably releasably interconnect said first and said second transversely-extending edges to each other so that a second compressive force is exerted on a carried article when said planar member is folded about an axis extending generally perpendicular to the longitudinal axis, the axis being inside and spaced from the folded member,

the width of the carrying portion of said planar member being selectively adjustable so that the size of the carrying portion is variable in accordance with the bulk of the carried article.

4,327,854

APPARATUS FOR GUIDING WEB-LIKE MATERIAL

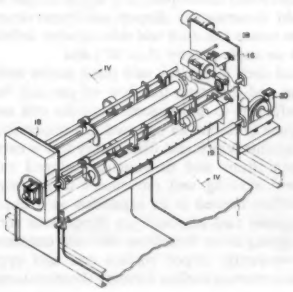
Tadashi Hirakawa, and Hiroshi Satou, both of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,677

Claims priority, application Japan, Aug. 7, 1979, 54-108736

Int. Cl.³ B65H *11/28, 25/06*

U.S. Cl. 226—95 **3 Claims**



1. An apparatus for guiding a continuously running web-like material and imparting a tension to said web-like material comprising:

a hollow suction box having a surface for contacting said web-like material;

a plurality of bores formed in said surface within a range corresponding to the maximum width of said web-like material at;

each of said bores having a smaller diameter at its inner side than at its outer side; and

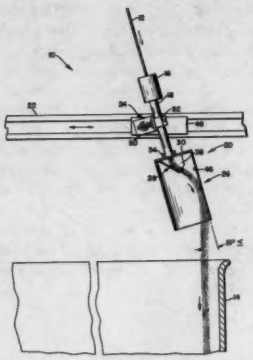
a sucking mechanism of adjustable sucking force and communicated with the cavity in said hollow suction box.

4,327,855

TOW DEFLECTOR DEVICE FOR PUDDLING JET

Benedict M. Lee, and Gary W. Gibson, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 25, 1980, Ser. No. 162,703
Int. Cl.³ B65H 51/16
U.S. Cl. 226—97 6 Claims



1. Device adapted to be connected to the outlet end of a gaseous jet from and by which a bundle of filamentary tow is gas puddled into a container positioned below the device, the gas from the jet being entrained in said bundle, said device comprising;

a plate means positioned a predetermined distance downstream from the outlet end of said gaseous jet and extending at a predetermined angle with respect to and across the axis of gaseous flow from said jet outlet and defining on its upstream surface a first downwardly sloped gas impervious surface below said jet outlet end and against which said filamentary tow impinges, becomes slowed and then cascades downwardly therealong;

said plate means having extending upwardly and tapering outwardly therefrom to either side of the filamentary tow movement side members adapted to limit the extent of expansion of said filamentary tow as it impinges and splays upon said downwardly sloped gas impervious surface, said plate means and each said side member defining therebetween an angle greater than 90°; and

a cylindrical shell encircling said plate means and partially confining and directing the flow of gas and being positioned adjacent to and spaced from the exit end of said plate means to define an opposed gas impervious curved surface against which said filamentary tow is carried by its momentum from said downwardly sloped surface for subsequent slowing and movement therealong and for being further limited in its expansion as it impinges and splays against said opposed gas impervious surface, and then dropping away therefrom into said container below; said downwardly sloped surface and said opposed gas impervious curved surface forming therebetween an acute angle.

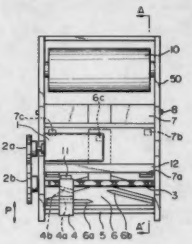
4,327,856

PAPER TRANSFER SYSTEM IN A PRINTER

Misoru Isobe; Etumi Ishii; Shuichi Imai, all of Tokyo; Tadasi Kodama, Sakura, and Wataru Ohara, Yokosuka, all of Japan, assignors to Oki Electric Industry Co., Ltd. and Nippon Telegraph & Telephone Public Corp., both of Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,396
Claims priority, application Japan, May 22, 1979, 54/62140
Int. Cl.³ B65H 17/36
U.S. Cl. 226—162 5 Claims

1. In a printer having a housing, a rolled paper mounted in the housing, a platen along which a paper runs, a motor, a carriage having a printing head for printing on a paper on the platen, coupling means for operably coupling said motor to said carriage, wherein said carriage is driven along the whole width of the paper by said motor through said coupling means, and a paper transfer means for transferring the paper by one line for every traverse of said carriage, characterized in that said paper transfer means comprises an idler positioned beneath the path of the paper, said idler being swingable in the moving direction of the paper, said idler having a first projection parallel to the path of the carriage and a second projection inclined to the path of the carriage, those projections being shorter than half of the travelling length of the carriage, those projections engaging with the corresponding slots provided at the bottom of said carriage to ensure the swing movement of the idler synchronized with the movement of the carriage, said idler having a friction means providing a greater frictional force to the paper in the normal moving direction of the paper and a smaller frictional force to the same in the opposite moving direction of the paper.

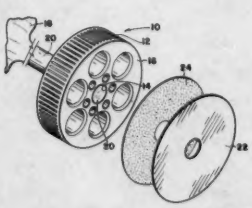


4,327,857

LOW INERTIAL CAPSTAN DAMPENER

Richard W. Pembroke, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Jun. 2, 1980, Ser. No. 155,314
Int. Cl.³ B65H 17/20
U.S. Cl. 226—190 2 Claims



1. An improved capstan for a tape drive, the capstan being adapted for attachment to the shaft of a drive motor, comprising:

a capstan body of low mass having a cylindrical tape engaging surface, an axial opening for engaging a motor shaft, and a radial sidewall;

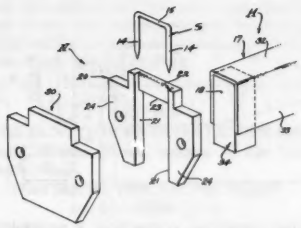
a thin disc of diameter no greater than that of the capstan; and

a layer of compliant adhesive positioned between said capstan sidewall and said disc, the adhesive serving to attach said disc to said sidewall and provide resilient energy absorptive limited rotational movement therebetween.

4,327,858
NON JAMMING HEAD AND MAGAZINE FOR FASTENER DRIVING TOOL

Richard E. Powers, San Marino, Calif., assignor to Power-Line Sales, Inc., El Monte, Calif.

Filed Dec. 26, 1979, Ser. No. 107,022
Int. Cl.³ B25C *5/06*
U.S. Cl. 227—121 **5 Claims**



1. The combination of a non jamming head and magazine for a staple driving tool having a driveway extending through a nose and to a driving plane substantially offset from the magazine and through which driveway a driver blade reciprocates to sever individual staples having spaced and parallel pointed shanks and from a stick supply thereof advanced by said magazine and to deliver the same through said driving plane and into work to be fastened;

the head having a pair of spaced back members with coplanar front faces and defining a back opening extending to said driving plane and forming parallel side walls of the driveway,

a front member fixed between said spaced back members and with a face engaging and coplanar with said front faces of the said pair of back members and forming a front wall of the driveway extending to said driving plane,

the magazine entering the back opening and having a staple supporting rail with a front face and sides of lessor width than the spacing of the shanks of the staples leaving the back opening unobstructed behind the driven staple shanks respectively and extending to said driving plane and forming a back guide for a crown extending between the spaced shanks of the driven staple and for the driver blade moving through said back opening,

and the driving plane into the work being offset from the points of the magazine supported stick of staples a height not to exceed the length of the staples, whereby penetration of a staple into the work preceeds its complete separation from the stick supply thereof.

4,327,859
METHOD OF COATING DUAL-WORM EXTRUDER BORES

Friedrich Theysohn, Hanover, Fed. Rep. of Germany, assignor to Firma Friedrich Theysohn, Langenhagen, Fed. Rep. of Germany

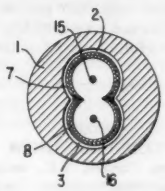
Continuation-in-part of Ser. No. 958,527, Nov. 7, 1978, abandoned. This application Mar. 5, 1980, Ser. No. 127,424
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752002
Int. Cl.³ B23K *20/08*
U.S. Cl. 228—107 **9 Claims**

1. A method of providing a wear-resistant layer on the inner bore faces of the housing of a dual-worm extruder having two longitudinally communicating parallel bores for accommodating extruder worms therein; the bores having, when viewed cross-sectionally, the shape of a figure 8, comprising the following steps:

(a) metallurgically bonding to one another a relatively soft sheet metal blank and a relatively hard, wear-resistant sheet metal blank in a face-to-face relationship;

(b) deforming two blank components obtained in step (a) into two longitudinally open tubular blanks with said relatively soft sheet metal blank forming the outer, convex side of each tubular blank; each tubular blank having diametral and length dimensions that generally correspond to those of the respective said housing bores;

(c) welding the tubular blanks to one another along respective longitudinal edges thereof for obtaining a composite body having a cross-sectional outline of a figure 8, generally corresponding to, but being smaller than the cross-sectional outline of said bores;



(d) introducing said composite body into said housing in a substantially coaxial relationship with said bores;

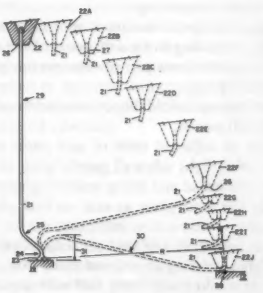
(e) introducing an explosive in the space surrounded by said composite body; and

(f) subsequent to step (e), igniting the explosive for effecting a plating of said inner bore faces with said composite body.

4,327,860
METHOD OF MAKING SLACK FREE WIRE INTERCONNECTIONS

Zeev Kirshenboin, Horsham, and Mark B. Soffa, Wynnewood, both of Pa., assignors to Kulicke and Soffa Ind. Inc., Horsham, Pa.

Filed Jan. 3, 1980, Ser. No. 109,211
Int. Cl.³ B23K *31/02*; H01L *21/90*; H05K *3/34*
U.S. Cl. 228—179 **24 Claims**



1. A method of making slack free fine wire interconnections between a first and a second conductive pad comprising the step of:

bonding an end of said fine wire to said first conductive pad employing a capillary bonding tool,

raising said bonding tool vertically upward and horizontally backwards relative to said fine wire to provide two small formed bends in said fine wire,

raising said bonding tool vertically to pay out a total length of said fine wire slightly greater than the amount required for the final wire interconnection,

moving said bonding tool horizontally and vertically downward toward said second conductive pad in a first prede-

termined path which causes a small portion of said wire to re-enter said bonding tool,

bending said fine wire at the working face of said bonding tool, leaving a length of wire outside of said bonding tool equal to said final wire length of the interconnection,

moving said bonding tool horizontally and vertically downward toward said second conductive pad in a second predetermined path which creates tension in said fine wire as said bonding tool approaches and touches said fine wire against said second conductive pad, and

bonding said fine wire under said bonding tool to said second conductive pad to form a slack free interconnection.

4,327,861

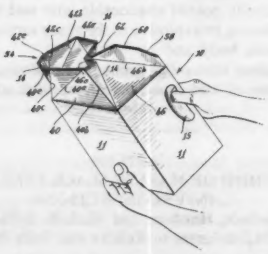
FLUID CONTAINER

Kenneth P. Thompson, Canton, N.C., assignor to Champion International Corporation, Stamford, Conn.

Filed Aug. 14, 1980, Ser. No. 178,071

Int. Cl.³ B65D *5/74*

U.S. Cl. 229—17 G **10 Claims**



1. In a rectangular parallelopiped fluid container having four upright sidewall panels each of which is foldably connected to an adjacent one of said panels, a top structure for forming an integral pouring spout, and a sealed bottom structure, the improvement comprising:

said pouring spout having a centerline lying in a vertical plane extending along a diagonal of the rectangular carton top and between a pair of adjacent upright sidewall panels and including

a panel extension foldably connected to each of said upright sidewall panels,

portions of adjacent ones of said panel extensions on said pair of upright sidewall panels lying on opposite sides of said centerline and being sealed together to lie in substantially the same plane as said vertical plane, and

said spout construction including mirror image score lines on opposite sides of said centerline defining a plurality of panels extending above said panel extensions and foldable towards and away from said sealed panel extension portions, whereby said spout construction can be closed and opened, respectively,

the remaining portions of said foldable panel extensions of said spout construction surrounding opposite sides of said adjacent panel extension portions sealed to each other when said foldable panel extensions are folded towards said sealed panel extension portions and having a common fold line therewith so that the sealed panel extension portions and the remaining portions of said foldable panel extensions forming said spout may be folded along said common fold line to lie flat on said top structure, and

a depression in each of the other pair of adjacent sidewall panels providing a handle for tilting said container when pouring the contents through the spout formed in said top structure.

4,327,862

WORM CENTRIFUGE

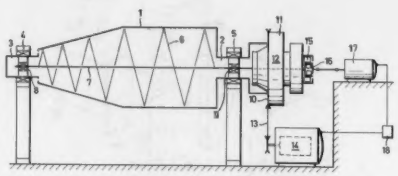
Willy Jakobs, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 87,446

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849547

Int. Cl.³ B04B *1/20, 3/04*

U.S. Cl. 233—7 **11 Claims**



1. A worm centrifuge, comprising: a rotatably supported centrifuge drum and a conveyor worm rotatably supported within the drum; a drive motor connected to drive the drum and a regulatable rotational speed drive motor connected to drive the worm; and means for driving the conveyor worm and the centrifuge drum at the same RPM by the regulatable motor during start-up and at different RPMs during operation and for insuring that external torques created by the drive motors are in the same direction.

4,327,863

BIMETALLIC CONTROLLED STEAM TRAP

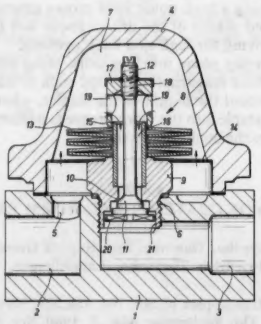
Werner Föller, Stuhr, Fed. Rep. of Germany, assignor to Gestra-KSB Vertriebsgesellschaft mbH & Co., Bremen, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,029

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1979, 2937395

Int. Cl.³ F16T *1/08*

U.S. Cl. 236—59 **4 Claims**



1. In a steam trap of the type including a housing having an inner chamber, a feed opening and a discharge opening disposed adjacent to one another and communicating with said inner chamber, and a control unit disposed in said chamber including at least one bimetallic plate, a locking member disposed at the low pressure side of said housing and secured to a valve spindle which extends centrally through said bimetallic plate and which has a cam mounted thereon for engagement with said bimetallic plate and a seat sleeve which defines a valve seat and an abutment for cooperative engagement with said locking member and the bimetallic plate, respectively, the improvement comprising:

said seat sleeve having a feed bushing supported thereon

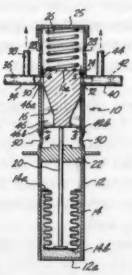
extending centrally through said bimetallic plate, which feed bushing, in cooperation with said valve spindle, defines a flow channel therebetween and said cam comprising a cap disposed over a free end of the feed bushing projecting from said bimetallic plate, on the latter of which said cap is supported, at least one of said feed bushing and said cap being provided with at least one admission opening which establishes communication between said inner chamber and said flow channel, said feed opening, said locking member and said valve seat being disposed on a side of said bimetallic plate distal from said free end of said feed bushing and said cap being disposed on another side of said bimetallic plate to proximate to said free end of said feeding bushing.

4,327,864

MULTIPLE FUNCTION PNEUMATIC THERMOSTAT

Alankar Gupta, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1980, Ser. No. 192,249
Int. Cl.[3] G05D *23/12*
U.S. Cl. 236—86 5 Claims



1. A temperature-responsive, fluid control valve comprising:

a temperature-responsive expansible element,

a cylinder having a side wall, said side wall having first and second control fluid ports and at least a third control fluid port axially spaced from said first and second ports,

piston means having a cylindrical piston wall mounted for reciprocation in said cylinder in reaction to expansion and contraction of said expansible element, said piston means having at least one circumferential portion thereof in sealing engagement with said cylinder wall, said piston means having first and second fluid passages therein, each of said passages having a first end and a second end, the first ends of said passages opening on said piston wall at preselected locations positioned relative to said first and second control fluid ports such that the first ends of said first and second passages are respectively placed in selective communciation with said first and second control fluid ports as said piston means moves in said cylinder, said second end of each of said passages opening on one end of said piston means such that said passages are each placed in communication with said third control port in said cylinder wall.

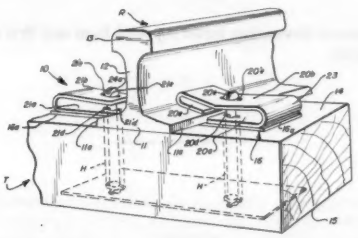
4,327,865

ASSEMBLY FOR SECURING A RAIL TO A SUPPORTING TIE

John L. Greene, 2832 Woodland Dr., Northbrook, Ill. 60062

Filed May 27, 1980, Ser. No. 153,184
Int. Cl.[3] E01B *9/00*
U.S. Cl. 238—310 15 Claims

1. An assembly for securing the base of a rail to a supporting tie, comprising a first plate member adapted to be interposed the rail base and an adjacent first surface of the tie, a segment of the plate member protruding outwardly from the rail base and provided with an aperture; a second plate member in spaced substantially registered relation with said first plate member and adapted to engage an opposing second surface of the tie, said second plate member provided with a slotted aperture, said plate member apertures adapted to be aligned with opposite ends of an elongated hole formed in the tie and extending transversely of the surfaces; a clip having an apertured inner section and an apertured outer section arranged in resilient spaced relation with respect thereto, said inner section engaging the outwardly protruding segment of said first plate member, said inner section having an aperture aligned with said first plate member aperture, and the outer section having a portion for engaging the rail base and retaining same against said first plate member, said outer section having an aperture aligned with said inner section aperture; and a locking element adjustable between locking and non-locking modes and having



a head end and a distal end interconnected by an elongated shank, the latter and said distal end being sized to pass through the aligned apertures of said clip and said plate members and the tie hole, the head end being impassable with respect to the clip outer section aperture, the distal end including transverse extensions passable through the slotted aperture of said second plate member only when the extensions are in a slot-registered relation with respect to said slotted aperture and said lock element is in a non-locking mode; said lock element being actuated to a locking mode only when the extensions are in a slot-registered relation, a predetermined compressive force is applied to the head end of the lock element causing said distal end and the extensions to pass through the slotted aperture of said second plate member, and a predetermined twisting force is subsequently applied to the head end causing the extensions to slidably engage surface portions of the second plate member circumjacent the slotted aperture.

4,327,866

DIFFERENTIAL PUMPING SYSTEM

Claude C. Mason, 3120 St. Catherine, Florrisant, Mo. 63033

Filed May 30, 1980, Ser. No. 154,952
Int. Cl.[3] B05B *1/28;* A62C *13/60*
U.S. Cl. 239—104 23 Claims

1. A pumping system for supplying liquid at a selected pressure to a liquid applicator means comprising:

a pump having an inlet and outlet portion, said inlet portion of said pump in communication with a first liquid supply;

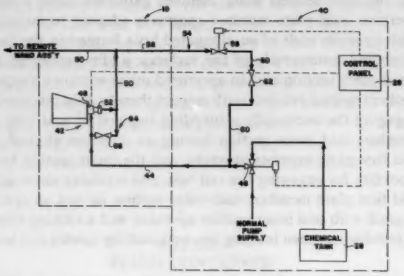
said outlet portion in communication with said liquid applicator means;

a second liquid supply in communication with said inlet portion of said pump;

supply valve means in communication with said first and second liquid supplies; and

by-pass means in communication with said pump to reduce the pressure of liquid supplied to said liquid applicator means, whereby when said supply valve means and said

by-pass means are actuated liquid from said second liquid supply is supplied to said liquid applicator means at a



pressure lower than liquid supplied from said first liquid supply.

4,327,867

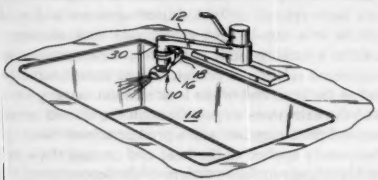
SINK RINSING DEVICE

William E. Jones, 6643 Emmet Ter., Hollywood, Calif. 90068, and Lynn R. Bowers, Portland, Oreg., assignors to William E. Jones, Hollywood, Calif.

Filed May 14, 1979, Ser. No. 38,783

Int. Cl.³ B05B *3/02*

U.S. Cl. 239—214.23 **14 Claims**



1. A device for rinsing a sink with water from the faucet of said sink comprising:

nozzle means having an inlet for receiving a generally vertical column of water from the faucet outlet, a lower portion for deflecting said column of water and an outlet for directing the deflected water column into a generally horizontal stream;

an elongate, flexible stem having one end attached to said nozzle means proximate said inlet;

first means for selectively maintaining the inlet of said nozzle means in an underlying relationship with the outlet of said faucet and the outlet of the nozzle facing generally laterally towards the sidewalls of said sink whereby water from said faucet is deflected in a directable stream towards the sides of the sink when said flexible stem is bent in a manner which produces said underlying relationship; and

second means for rotatably connecting said stem to said faucet so that said nozzle may be rotated about a generally vertical axis around the outlet of said faucet when said nozzle is maintained in said underlying relationship with said faucet outlet.

4,327,868

SWING DISC NOZZLE STRUCTURE FOR RAMJET ENGINE

William M. Burkes, Jr., McGregor, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 29, 1979, Ser. No. 43,535

Int. Cl.³ F02K *9/86*

U.S. Cl. 239—265.15 **4 Claims**

1. In a swing disc ramjet nozzle assembly comprising a nozzle having a fixed, geometrically designed, throat area and a generally oblong discoid swing disc structure positioned therein and rotatable about a central axis to vary the geometry of said throat area;

the improvement wherein said disc structure comprises:

a. a metallic generally T-shaped center body having a top portion and a perpendicular center portion, the remote end of which forms the bottom of said T-shape;

b. fore and aft side insulation retainer flanges each being affixed to one of the top and bottom portions of said T-shaped center body; and

c. a pair of graphite inserts mounted parallel with and on each side of the perpendicular center portion of said T-shaped center body and each being retained thereon by said fore side insulation retainer flange affixed to the bottom of said center body; said aft flange also engaging said graphite inserts, said graphite insert having a corrosion resistant coating material deposited on the exposed surfaces thereof.

4,327,869

FLUID DEFLECTING ASSEMBLY

Motoyuki Nawa; Norio Sugawara, and Yutaka Takahashi, all of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

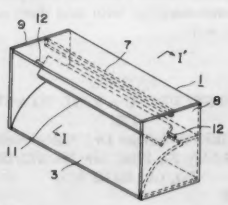
Filed Jul. 3, 1980, Ser. No. 165,939

Claims priority, application Japan, Jul. 12, 1979, 54-94492; Jul. 24, 1979, 54-94492

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.³ B05B *1/04*

U.S. Cl. 239—590.5 **5 Claims**



1. A fluid deflecting assembly which comprises:

a fluid duct having supply and exit openings defined at

respective ends of said fluid duct and through which a fluid medium flows from the supply opening towards the exit openings;

a first guide wall structure along one side of said duct and having an outwardly diverging curved downstream wall portion adjacent the exit opening, said outwardly diverging curved wall area having an upstream edge with the surface extending substantially parallel to the axial direction of said duct between the supply and the exit openings and said curved downstream wall area being curved for diverging outwards in a direction downstream with respect to the direction of flow of the fluid medium in said duct, a setback at said upstream edge extending toward the center of said duct, and a straight upstream portion connected to said setback and extending parallel to said axial direction;

a second guide wall structure along the opposite side of said duct and having a straight upstream wall portion, a ridge at the downstream end of said straight upstream wall portion, and a straight downstream wall portion extending downstream of said duct from said ridge and in alignment with said straight upstream wall portion, said straight upstream wall portion and straight downstream wall portion extending parallel to said axial direction and said straight downstream wall portion extending sufficiently far in the downstream direction for causing a stream of fluid flowing therealong to adhere thereto; and

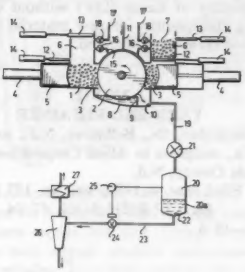
a pivotally supported deflecting blade in said duct between said guide structures for deflecting the flow of the fluid medium flowing through the fluid duct and for dividing the flow of fluid medium into two components at all positions of said blade, said deflecting blade having the downstream edge thereof positioned downstream of said ridge and also downstream of said setback, said deflecting blade being movable between a first position in which it is substantially parallel to said axial direction for causing the components between said second guide wall structure and said deflecting blade and between said deflecting blade and said first guide wall structure to flow substantially parallel to said axial direction with the component between said deflecting blade and said second guide wall structure being deflected around said ridge and adhering to said straight downstream wall portion, whereby a single stream substantially parallel to the axial direction is formed, through intermediate positions in which the component between said deflecting blade and the first guide wall structure is deflected along and caused to adhere to said outwardly diverging curved downstream wall portion and the component between said deflecting blade and said second guide wall structure is deflected by said ridge for being joined with the component between said deflecting blade and said first guide wall structure, whereby a single diverted stream is formed, and a second position in which the component between the deflecting blade and the first guide wall structure is deflected along and caused to adhere to said outwardly diverging curved downstream wall portion and the component between said deflecting blade and said second guide wall structure is deflected by the deflecting blade around said ridge and along said straight downstream wall portion, whereby two separate fluid streams are formed, one flowing parallel to said axial direction and one diverted therefrom.

4,327,870

APPARATUS FOR CONTINUOUSLY GRINDING WOOD UNDER PRESSURE AND CONTINUOUSLY DISCHARGING GROUNDWOOD

Pekka O. Haikkala, Tampere, Finland, assignor to OY. Tampella AB, Tampere, Finland

Division of Ser. No. 6,155, Jan. 24, 1979, Pat. No. 4,270,703.
This application Sep. 11, 1980, Ser. No. 185,858
Claims priority, application Finland, Feb. 16, 1978, 780515
Int. Cl.³ B02C *23/24*
U.S. Cl. 241—34 **5 Claims**



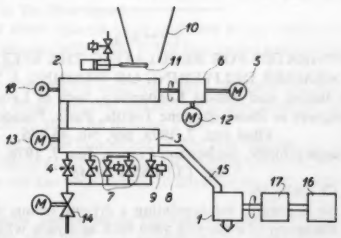
1. Apparatus for continuously processing wood, comprising means defining a grinding chamber, means for providing gas under superatmospheric pressure in the grinding chamber, a grinding means which is mounted for rotation in the grinding chamber, a device for feeding wood into the grinding chamber to form a primary groundwood stock therein, and a device for discharging the primary groundwood stock from the chamber without allowing gas to escape from the grinding chamber to atmosphere, the discharging device comprising a stick crusher for crushing sticks present in the primary groundwood stock thereby to produce a secondary groundwood stock, and means for receiving the secondary groundwood stock from the stick crusher and for continuously discharging the secondary groundwood stock while preserving a hydraulic seal of groundwood stock thereby to maintain the groundwood stock in the apparatus under superatmospheric pressure.

4,327,871

METHOD FOR REGULATING A PELLET MILL

Ebbe B. B. Larsen, Taastrup, Denmark, assignor to Norvidan Engineering ApS, Agedrup, Denmark

Continuation of Ser. No. 963,723, Nov. 27, 1978, abandoned.
This application Jul. 29, 1980, Ser. No. 173,297
Claims priority, application Denmark, Nov. 30, 1977, 5299/77
Int. Cl.³ B02C *25/00*
U.S. Cl. 241—18 **2 Claims**



1. Method of regulating the temperature of raw material which is supplied into a pellet mill, comprising the following steps, in the order stated:

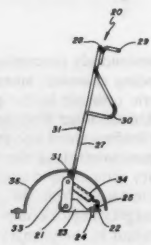
(a) supplying steam to the raw material in a quantity (DV) proportional to the quantity of raw material (n), so that the proportion (DV/n) is essentially constant;
(b) increasing the quantity of steam (DV) in proportion to the quantity of raw material (n), until the power consumption (I motor) of the mill (4) begins to rise;
(c) reducing the quantity of steam (DV) until the power consumption falls to a minimum;
(d) maintaining this new proportion (DV/n) during the continued operation until a change in the properties of the raw material is registered through an increased power consumption; and thereupon
(e) reducing the power consumption by changing the supplied quantity of steam (DV) without correspondingly changing the quantity of raw material (n), so that the proportion (DV/n) is changed.

4,327,872

YARN END RETAINER

Harold G. Sachleben, Sr., Bellmawr, N.J., and Robert Lees, Chester, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 4, 1980, Ser. No. 127,166
Int. Cl.³ B65H *54/02, 67/04*
U.S. Cl. 242—18 A **7 Claims**



1. A yarn end retainer, for use in conjunction with a yarn package on a yarn winding device which comprises means for moving a yarn package from a winding position to a doffed position, the yarn package having a free trailing yarn end when moved from the winding position to the doffed position, said yarn end retainer comprising:

a bail, comprising at least one leg which has two ends, one end being pivotally mounted for movement about pivot means;

and

means for urging the bail to pivot in a first direction such that the other end of the leg rides a part of the surface of the yarn package to engage and retain the free trailing yarn end and prevent entanglement thereof with the winding device when the yarn package has moved to the doffed position.

4,327,873

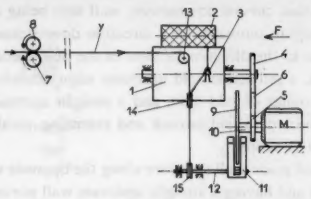
APPARATUS FOR REGULATING THE SPEED OF A MEMBER DELIVERING OR WINDING A YARN

Paul Juppet, and Robert Konopatsky, both of Lyons, France, assignors to Rhone-Poulenc Textile, Paris, France

Filed Jun. 7, 1979, Ser. No. 46,386
Claims priority, application France, Jun. 7, 1978, 78 17252
Int. Cl.³ B65H *59/38*
U.S. Cl. 242—45 **11 Claims**

1. An apparatus for regulating a driving means which controls the speed of a moving yarn such as a yarn which is being delivered and a yarn which is being drawn off, in accordance with a variation between the delivery and draw off speeds, said apparatus comprising:

(a) a driving means including an asynchronous electric motor, providing a slip coupling by ensuring by itself a slippage, directly connected to a driving shaft, said slip coupling being non-adjustable during its operations;
(b) an eddy current braking assembly comprising a braking element directly connected to the driving shaft and a means including a magnet for creating a variable magnetic field to be applied to said braking element;
(c) loop means for forming a variable loop in said yarn the size of the loop being varied according to said variation between the delivery and draw-off speeds;
(d) monitoring means for monitoring the size of the loop; and



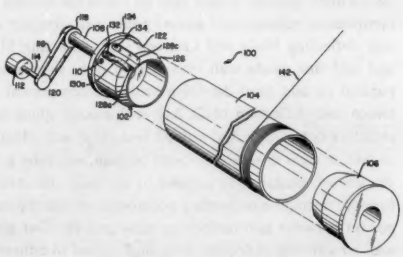
(e) means for interconnecting said monitoring means and said means for creating a variable magnetic field, said means for interconnecting causing said means for creating a variable magnetic field to increase or decrease the magnitude of the magnetic field as a function of the size of the loop, thereby applying a variable magnetic field to the braking element and varying the braking of the driving shaft, whereby the size of the loop reaches an equilibrium and the driving shaft is regulated to be at equilibrium with the delivery or draw off speed of the yarn.

4,327,874

SPRING LOADED CORE ADAPTOR

Gerald R. Bruno, Paterson, N.J., assignor to Progressive Machine Company, Inc., Paterson, N.J.

Filed Nov. 28, 1980, Ser. No. 211,209
Int. Cl.³ B65H *54/54*
U.S. Cl. 242—46.2 **12 Claims**



1. An adaptor for releasable engagement with the internal surface of one end of a hollow core and permitting rotation of said core about the longitudinal axis of said hub in one direction for winding material upon said core, said adaptor comprising a hub including at least one groove having a bottom surface formed within the external surface of said hub and arranged in axial alignment therewith, and a spring member having first and second spaced edges provided within said groove and adapted to be deflected towards said bottom surface of said groove, said groove constructed and arranged to receive said spring member therein such that upon deflection of said spring member towards said bottom surface of said groove at least a portion of said first edge remains sufficiently protruding beyond the external surface of said hub to engage a portion of the internal surface of said core to prevent relative rotation between said core and said hub in response to the rotation of said

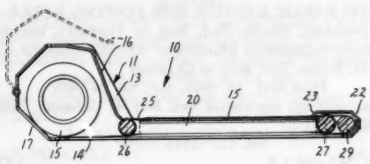
hub about its axis in one direction while said second edge being sufficiently adjacent to the external surface of said hub to releasably engage the internal surface of said core to permit relative rotation between said core and said hub in response to rotation of said hub in a direction opposite said one direction.

4,327,875

PRESSURE SENSITIVE NOTEPAPER DISPENSER

Clinton W. Lightfoot, White Bear Lake, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jun. 9, 1980, Ser. No. 157,227
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.53 **4 Claims**



4. A notepaper dispenser comprising

a roll of notepaper having a coating of a pressure sensitive adhesive on a surface of the paper opposite the writing surface,

a frame having a pair of side walls, means defining a support for said roll of notepaper, a platform extending between said sidewalls, and a cover spaced from said support and including a flange spaced above one end of said platform,

a pair of rotatable cylindrical rollers extending transversely between said side walls and positioned one at each end of said platform,

an endless belt positioned about said pair of rollers and positioned above and below said platform to enclose said platform, and

a guide roller placed parallel to and spaced from the roller farthest from said support for said roll of notepaper to carry said notepaper from one surface of the belt around said guide roller and back onto the belt above said platform and below said flange.

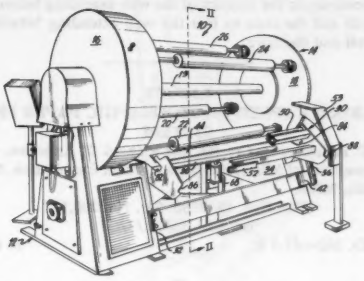
4,327,876

CONTINUOUS CENTER-WINDING APPARATUS AND METHOD

William T. Kuhn, 4 Heather Ct., Upper Saddle River, N.J. 07458, assignor to William T. Kuhn; Paul F. Rose and Thomas H. Rose

Filed Oct. 2, 1980, Ser. No. 193,015
Int. Cl.³ B65H *19/20*
U.S. Cl. 242—56 A **28 Claims**

1. Apparatus for continuously center-winding a web into a plurality of rolls, comprising a rotatable turret having a plurality of winding core locations arranged generally parallel to an axis of rotation of said turret, said plurality of winding core locations including a first winding core location and a second winding core location; indexing means for indexing said turret such that winding cores carried by said turret are moved successively from said second winding core location to said first winding core location; first cutting means movable between a first position on a side of said second winding core location remote from said first winding core location and a second position between said first winding core location and said second winding core location; moving means for moving said first cutting means between said first position and said second position; second cutting means positioned between said first winding core location and said second winding core location so as to cooperate with said first cutting means to sever a web being wound onto a winding core arranged at said first winding core location when said first cutting means is in said second position; first controlling means for controlling said indexing means such that said indexing means moves a winding core from said second winding core location to said first winding core location immediately after a winding operation is commenced at said second winding core location; and second controlling means for controlling said moving means such that said moving means moves said first cutting means from said first position to said second position immediately after the movement of a winding core from said second winding core location to said first winding core location.

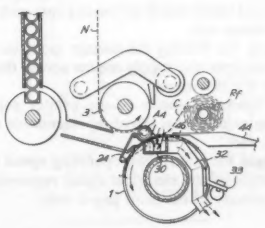


4,327,877

WINDING DEVICE

Fabio Perini, Via della Fornace, S. Michele di Moriano, Lucca, Italy

Filed Sep. 10, 1980, Ser. No. 186,002
Claims priority, application Italy, Sep. 21, 1979, 9543 A/79
Int. Cl.³ B65H *17/12, 75/28*
U.S. Cl. 242—66 **12 Claims**



1. A winding device for winding a web on a core for forming a roll comprising:

web feed means for feeding the web at a feed speed;

a first drum rotatable at a peripheral speed substantially equal to the feed speed;

a second drum spaced from said first drum, rotatable at a speed substantially equal to the feed speed and guiding the fed web;

core insert means for inserting a core between said first and second drum; said first and second drums rotating to wind the web on the core to form a roll;

drum drive means connected to said first and second drums for rotating said drums and for slowing one of said drums after a roll has been formed to advance the roll on said one drum;

said inserter means being operable to insert a new core between said first and second drums when the roll is advanced with web extending between the roll and the new core;

web tear means associated with said first and second drums for tearing the web between the roll and the core;

said drum drive means being operable to increase the slowed rotation of said one drum to the feed speed to wind web on the new core;

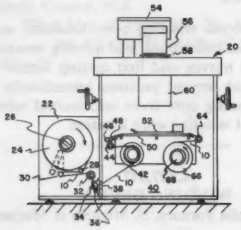
said web tear means comprises one of said drums including at least one annular seat, a perforated covering over said seat and suction means for creating a vacuum in said seat to draw therein through perforations of said perforated covering in the vicinity of the web extending between the roll and the core to tear the web extending between the roll and the core.

4,327,878

VARIABLE SPEED PHOTOGRAPHIC PAPER FEED SYSTEM

Jess F. Fauchier, II, Crystal, and Richard D. Anderson, Maple Grove, both of Minn., assignors to Pako, Corporation, Minneapolis, Minn.

Filed Nov. 19, 1980, Ser. No. 208,177
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—67.3 R **16 Claims**



1. A paper feed system for a photographic printer comprising:

supply means for supplying a photographic print paper web;

a paper deck;

a takeup spool upon which the print paper web is wound to form a takeup roll;

motor means for driving the takeup spool to advance the paper web from the supply means across the paper deck and onto the takeup roll;

means for sensing velocity of the printer paper web and providing an electrical signal representative of the sensed velocity; and

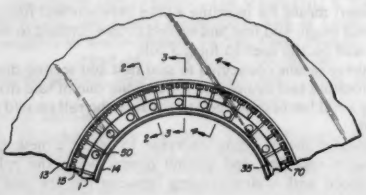
control means for controlling operating speed of the motor as a function of the electrical signal representative of the sensed velocity of the print paper web.

4,327,879

MAGNETIC TAPE REEL

Michael W. Tanny, Westminster, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Oct. 9, 1980, Ser. No. 195,677
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—71.8 **4 Claims**



1. A magnetic tape reel for computers, said reel comprising:

a central part comprising a driving hub having a first set of spokes extending radially outwardly from the outer surface of said hub on opposite sides of said central part;

a support ring concentric with said hub and having a second set of spokes extending radially inwardly from said inner surface of said ring on opposite sides of said central part; and

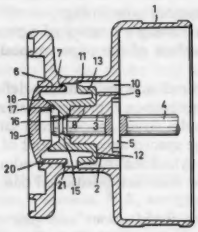
two side flanges formed with inner and outer welding surfaces projecting so as to contact said central part at said first and second sets of spokes, said side flanges being connected to said central part by means of ultrasonic welds along those surfaces where the side flanges contact said first and second sets of spokes forming a box-like structure having a high resistance to compression produced by tape being wound thereon.

4,327,880

RELEASABLE SPOOL FOR FISHING REELS

Klaus Dörbandt, Berlin, Fed. Rep. of Germany, assignor to Deutsche Angelgeräte Manufactur (DAM) Hellmuth Kuntze GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,666
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 8008652[U]
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 R **3 Claims**



1. In a releasable spool assembly for a fishing rod reel of the type having a shaft and a spool coupled to said shaft for rotation therewith by means of a pin, the improvement comprising:

said shaft having a circumferentially-extending annular groove formed therein adjacent one end thereof;

said spool having an outer casing having a front face with a cylindrical recess formed therein, a central hub having a bore formed therethrough for receiving the shaft and a central member projecting into said recess and a crosspiece interconnecting said outer casing and said hub;

said crosspiece having a plurality of circumferentially-disposed, spaced-apart cylindrical bores having axes parallel to the axis of said shaft, said bores extending into said recess such that they are spaced from, but extend along, at least a portion of said central member, said bores having a sidewall defining an inner open end thereof which merges with said outer casing to define a shoulder;

said front face of said outer casing having an inner wall defining said cylindrical recess which has an offset shoulder axially spaced from said bores and radially inwardly spaced from said shoulder of said bores;

arresting means mounted in said recess having an annular-shaped base plate supported on said crosspiece, said base plate having an outer edge from which extends a plurality of resilient outer latch plates which extend axially relative to said bores and which yieldingly engage behind said shoulders of said bore in a snap-fit manner, said base plate also having an inner edge from which extends a plurality of axially-yieldable circumferentially-disposed inner latch plates which are supported on said central member of said hub, each of which has a radially-inwardly directed arresting lug projecting therefrom, which is configured for snap-fit engagement within said annular groove of said

shaft when said shaft is inserted in said bore of said hub, said inner latch plates also each having a free inner end on which is formed a sloping ramp face; and

a push button displaceably mounted in said recess, said button having a resilient outer jacket having a free circumferential edge provided with a radially-outwardly extending flange which engages behind said offset shoulder of said sidewall of said recess, said push button also having a ramp face positioned and configured to engage said ramp faces of said inner latch plates upon inward displacement of said button and urge said inner latch plates to spread apart in a radially outward direction so as to thereby withdraw said arresting lugs thereof from said groove of said shaft to permit release of said shaft.

4,327,881

BELT-BRAKING DEVICE FOR SAFETY BELT SYSTEMS

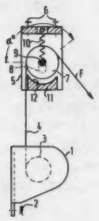
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Oct. 21, 1980, Ser. No. 199,329

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943441

Int. Cl.³ A62B *35/02;* A65H *75/48*

U.S. Cl. 242—107.2 **25 Claims**



1. Belt-braking system for safety belts, especially for motor vehicles, which comprises an automatic roll-up device having a roll-up roller on which a safety belt is wound and which is normally unwound by pulling the belt against the force of a spring, said roll-up device having a locking device which is activated to lock the roll-up roller when the vehicle accelerates or decelerates beyond a predetermined rate, a belt-brake having a rotatably supported brake roller which is partly wrapped around by said belt from said automatic roll-up device, friction or positive locking means to arrest said brake roller, and activating means activated by the belt pull when it exceeds a predetermined force, to cause said locking means to arrest said roller whereby said belt is braked by the surface of said roller around which said belt is partly wrapped when the brake roller rotation is arrested.

4,327,882

SEAT BELT RETRACTOR WITH MANUAL LOCK UP

John W. Frankila, Sterling Heights, and Robert L. Stephenson, Utica, both of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 23, 1980, Ser. No. 161,814

Int. Cl.³ A62B *35/02;* B65H *75/48*

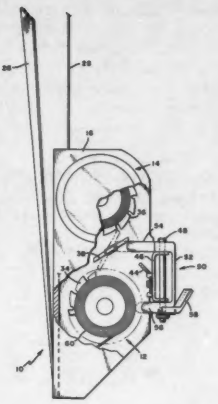
U.S. Cl. 242—107.4 A **15 Claims**

1. A seat belt retractor comprising:

storage means adapted to store seat belt webbing, said storage means being movable in opposite belt rewind and extraction directions;

emergency locking means movable from an unlock to a lock position to automatically lock said storage means against movement in the extraction direction;

manually actuatable means operable to move said locking means to its locked position to manually lock said storage means against movement in the extraction direction; and release means automatically actuatable to release said manually actuatable means upon the establishment of a predetermined wound condition of said seat belt on said storage means.



4,327,883

LOCK RELEASING DEVICE OF A RETRACTOR PROVIDED WITH AN EMERGENCY LOCKING MECHANISM

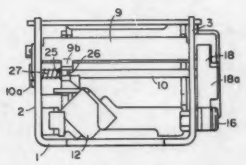
Kazuo Yamamoto, Sagamihara, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,380

Claims priority, application Japan, Aug. 21, 1979, 54/114022[U]

Int. Cl.³ A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107.4 A **5 Claims**



1. A seat belt retractor provided with an emergency locking mechanism, the retractor comprising webbing take-up means including a main gear and an auxiliary gear, inertia sensing means adapted to change position responsive to a vehicle speed change of predetermined value, an auxiliary locking member adapted to cooperate with said auxiliary gear, means mounting said auxiliary locking member for movement axially with respect to the auxiliary gear, the auxiliary locking member having an axial position in which it is aligned with said auxiliary gear, the auxiliary locking member when in said axial position having a first position in which it is non-engageable with said auxiliary gear, the auxiliary locking member being movable from the first position responsive to a change in position of the inertia sensing member to a second position in which it is engageable with the auxiliary gear and being movable by the auxiliary gear from the second position to a third position responsive to rotation of the auxiliary gear in a webbing pay-out direction, a main locking member adapted to cooperate with the main gear, the main locking member normally assuming a non-engaging position with respect to the main gear and being movable to an engaging position with respect to the main gear responsive to movement of the auxil-

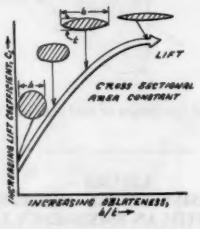
iary locking member from the second position to the third position, for locking the take-up means against movement in the webbing pay-out direction, and release means for unlocking the take-up means, the release means comprising a first cam member for moving the main locking member from the engaging position to the non-engaging position, a second cam member for moving the auxiliary locking member axially away from said axial position and means for operating the first and second cam members in unison.

4,327,884

ADVANCED AIR-TO-SURFACE WEAPON

William S. Lawhorn, Rockwall, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 23, 1980, Ser. No. 114,533
Int. Cl.³ F41G 7/00; F42B 15/02, 15/16
U.S. Cl. 244—3.1 **2 Claims**



1. An advanced air-to-surface weapon in the structural form of an aerodynamically-configurated, monowinged, temporarily-integrated, selectively-separable unit having a symmetrical high lift lenticular cross section with a width-to-thickness fineness of approximately 2.5, comprising a plurality of constituent components which include:

a. a component means for guiding and piloting said weapon, wherein this component means is in the form of a module, structurally comprises the forward nose portion of said weapon, and has a lenticular cross section with a foreshape conforming to a Sears-Haack half-body profile of least drag in width and thickness;

b. a component means for propelling, stabilizing, and controlling said weapon, wherein this component means is in the form of a module which is disposed aft of and is associated with said guiding and piloting component means, has a lenticular cross sectionn conforming to a Sears-Haack half-body shape in width and thickness and an aft end base which is truncated for a rocket nozzle of a rocket motor housed therein, and structurally comprises the boattail portion of said weapon, with said boattail portion having a starboard side with a first blended planar wing section attached thereat and a port side with a second blended planar wing section attached thereat, wherein said first and second blended planar wing sections are symmetrical, are of a clipped delta wing planform, and have a low exposed aspect ratio, and wherein each said wing section has a wing tip to which is mounted an identical vertical stabilizer/rudder of delta planform; and

c. a component warhead payload module having a forward end and an aft end, with this module interposed between, and releasably connected to, said guiding and piloting component means at said forward end of this module and said propelling, stabilizing, and controlling means at said a of this module, and with this module having a lenticular cross section which is constant.

2. An advanced air-to-surface weapon in the structural form of an aerodynamically-configurated monowinged, temporarily-integrated, selectively-separable unit having a semi-linticular cross section with a width-to-thickness fineness of approximately 2.1, comprising a plurality of constituent components which include:

a. a component means for guiding and piloting said weapon, wherein this component means is in the form of a module, structurally comprises the forward nose portion of said weapon, has a semi-lenticular cross section with a foreshape conforming to a Sears-Haack half-body profile of least drag in width and thickness, and has a starboard side with a first small fixed-incidence canard fin attached thereat, and a port side with a second small fixed-incidence canard fin attached thereat, wherein said first and second canard fins are symmetrical;

b. a component means for propelling, stabilizing, and controlling said weapon, wherein this component means is in the form of a module which is disposed aft of and is associated with said guiding and piloting component means, has a semi-lenticular cross section conforming to a Sears-Haack half-body shape in width and thickness and an aft end base which is truncated for a rocket nozzle of a rocket motor housed therein, and structurally comprises the boattail portion of said weapon, with said boattail portion having a starboard side with a first blended clipped delta planform wing section attached thereat, and a port side with a second blended clipped delta planform wing section attached thereat, wherein said first and second wing sections are symmetrical, and wherein each wing section has a wing tip to which is mounted an identical, foldable, vertical stabilizer; and

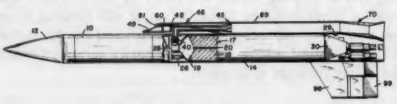
c. a component warhead payload module having a forward end and an aft end, with this module interposed between and releasably connected to, said guiding and piloting component means at said forward end of this module and said propelling, stabilizing and controlling means at said aft end of this module and with this module having a semi-lenticular cross section which is constant.

4,327,885

THRUST AUGMENTED ROCKET

Ralph W. Blevins, Columbia; James L. Keirsey, Rockville, and William B. Shippen, Brookeville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1971, Ser. No. 187,136
Int. Cl.³ F42B 15/16
U.S. Cl. 244—3.24 **15 Claims**



1. An aerial vehicle including means carried by the vehicle which, when ignited, will produce a fuel-rich exhaust,

propelling means arranged on the vehicle symmetrically thereabout,

means for igniting said first-mentioned means,

means for conducting fuel-rich exhaust from said first-mentioned means to said propelling means upon operation of said igniting means,

and expandable means connected between said fuel-rich exhaust conducting means and said propelling means to allow for thermal expansion due to said exhaust,

said fuel-rich exhaust producing means including a motor having a propellant grain and said propelling means comprising a plurality of air breathing engines,

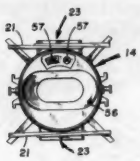
said fuel-rich exhaust mixing with air in said engines and burning to produce thrust.

4,327,886

INTEGRAL ROCKET RAMJET MISSILE

Alfred J. Bell, Silver Spring; Albert S. Polk, Jr., Baltimore; Lester Cronvich, Columbia, and Everett J. Hardgrave, Jr., Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1972, Ser. No. 312,076
Int. Cl.[3] F42B *15/16*
U.S. Cl. 244—3.29 10 Claims



1. An aerial vehicle comprising:
an airframe;
a rocket casing carried by the airframe and having a propellant therein;
an exhaust nozzle disposed at the aft end of the casing and having an annular groove formed in the inner surface thereof;
means for igniting the propellant in the casing;
a fuel tank carried by the airframe and having a second propellant therein;
air supply means carried on the airframe;
fuel delivery means connected between the tank and the solid rocket casing;
means carried by the airframe and being displaced upon burnout of the first-mentioned propellant to admit air from the air supply means to the rocket casing to mix with the propellant from the tank;
a displaceable booster nozzle disposed in the exhaust nozzle and having an annular groove formed in the outer surface thereof, the annular groove in the booster nozzle mating with the annular groove in the exhaust nozzle;
a retaining ring disposed in the annular groove formed in the booster nozzle and extending from said groove into locking engagement with the annular groove in the exhaust nozzle, thereby mounting the booster nozzle in the exhaust nozzle; and,
means connected to the retaining ring for inwardly displacing said retaining ring in order to constrict the ring and extract said ring from engagement with the annular groove in the exhaust nozzle, the booster nozzle being ejected from the exhaust nozzle by residual pressure in the casing on burnout of the propellant in the casing, the vehicle having been accelerated to a relatively high speed by the burning of the propellant in the casing, said casing becoming a combustion chamber on said burnout of the propellant therein and the air from said air supply means and the propellant from the tank being ignited by residual heat in the chamber formed by the casing for producing ramjet thrust at the exhaust nozzle for accelerating the vehicle to a relatively higher speed.

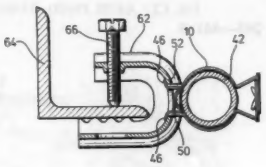
4,327,887

MOUNTING CLIP

Masaaki Kumakura, Tokyo, Japan, assignor to Negurosu Electrical Ind. Co. Ltd., Tokyo, Japan

Filed Jun. 27, 1979, Ser. No. 52,574
Claims priority, application Japan, Sep. 27, 1978, 53-118758
Int. Cl.[3] F16L *3/08*
U.S. Cl. 248—73 12 Claims

1. A clip for mounting a conduit or the like comprising, two wriggly strip members of identical configuration and structure, each of which has a center arm portion of outwardly curved configuration adapted to accomodate and hold a conduit in cooperation with the center arm portion of the other strip member, an outwardly bent tongue at one end having a transverse curvature, and an inwardly bent flat extension at the other end, said extension being provided with a detention bore of substantially trapezoidal shape and a locking lug projecting externally of the surface of the extension from the larger base of the trapezoidal detention bore, said strip members being



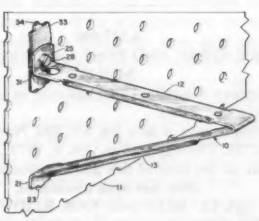
arranged in opposition to each other about the conduit, so that the outwardly bent tongues are adapted to engage and be held in a circular opening of a support member having substantially a conforming curvature and the inwardly bent extensions lie one above the other with each locking lug passing through the trapezoidal detention bore of the opposing strip and engaging with a corner portion of the opposing trapezoidal detention bore adjacent the smaller base thereof to thereby interlock the two strips.

4,327,888

BRACKETS FOR ATTACHMENT TO PERFORATED PANELS

Henry F. Scheneman, Comstock Park, Mich., assignor to Markson Manufacturing Company, Grand Rapids, Mich.

Filed Jul. 10, 1980, Ser. No. 167,451
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—221.2 7 Claims



1. In combination with a panel having regularly spaced apertures, an attachment assembly including inner and outer plates each having an offset end providing a portion normal to said plate and adapted to traverse the thickness of said panel, and a portion disposed to engage the opposite side of said panel from the plate associated therewith with said plate approaching parallelism with said panel, said portions being insertable in one of said apertures with said plate inclined with respect to said panel, the opposite ends of said plates from said offset ends being adapted to overlap and having alignable openings when said offset ends are respectively engaged in spaced apertures, and also including a member freely traversing said opening in the outer of said overlapped ends and in threaded engagement with the inner of said overlapped ends at said opening therein, wherein the improvement comprises:
a configuration of said outer overlapped end wherein said opening extends laterally to the edge of said plate, and aligned to provide for rotary engagement of said plate with said member by pivotal movement of said outer plate

about the aperture of said panel engaged by said outer plate.

4,327,889

READING-APPARATUS

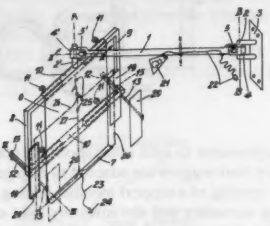
Josef Zaplotnik, Wallisellenstrasse 21, CH-8600 Dübendorf, Switzerland

Filed Mar. 28, 1980, Ser. No. 134,805

Claims priority, application Switzerland, Apr. 6, 1979, 3231/79

Int. Cl.³ A47B *19/00, 97/04*

U.S. Cl. 248—441 B **16 Claims**



1. Device for reading, comprising a holding panel adjustably mounted on a support or on a pivotably supported beam of a mounting device and serving for the support of an object intended to be read or looked at, e.g. a book, crochure, newspaper, etc., characterized in that the holding panel having at its lower edge a supporting ledge is provided with frame parts with clamping devices, each of said clamping devices comprising a fixed clamping plate diposed in the plane of the holding panel and a moving clamping plate disposed parallel to said fixed clamping plate and adapted to be retracted against the force of a spring, said frame parts being laterally movable in and out along guides and being mounted on a pivoting support rod which, in turn, is mounted on a bracket to pivot around a vertical axis B—B, and is adapted to carry at its free end the holding panel mounted to pivot around a vertical axis A—A.

4,327,890

BATTERY STRAP AND POST CAST-ON MULTI USE MOLD

John D. Cattano, Castalia, Ohio, assignor to Mac Engineering, Benton Harbor, Mich.

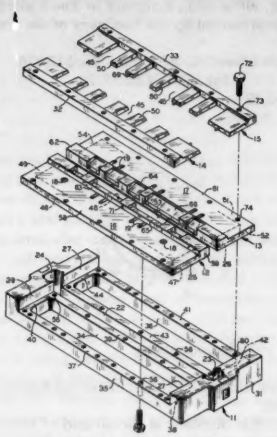
Continuation-in-part of Ser. No. 850,100, Nov. 10, 1977, Pat. No. 4,175,725. This application Oct. 9, 1979, Ser. No. 83,219

The portion of the term of this patent subsequent to Nov. 27, 1996, has been disclaimed.

Int. Cl.³ B22C *9/06, 9/08;* B22D *19/00*

U.S. Cl. 249—110 **9 Claims**

1. A mold assembly for casting straps and posts on plates of storage batteries comprising a horizontally extending base including an elongate longitudinal member and a horizontally extending transverse beam at each end of said elongate longitudinal member; said elongate longitudinal member defining at least a portion of a flow channel extending longitudinally thereof and having a horizontal planar upper surface extending longitudinally thereof adjacent said flow channel; an insert mounted on said horizontal planar upper surface of said elongate longitudinal member and having a horizontally extending upper surface and defining a mold cavity therein; said insert having a body portion adjacent and spaced from said elongate longitudinal member and between said transverse end beams; a longitudinal flange on said insert extending from said body portion thereof adjacent said elongate longitudinal member having a width transverse of the length of said elongate longitudinal member in the dimension parallel to said horizontal planar upper surface of said elongate longitudinal member greater than its average thickness transverse of the length of said elongate longitudinal member in the dimension perpendicular to said horizontal planar upper surface of said elongate longitudinal member and having a horizontal, planar under surface; said horizontal planar upper surface of said elongate longitudinal member mating with said planar under surface of



said longitudinal flange of said insert in close fitting, fluid tight relationship; and means spaced along said flange of said insert to draw said under surface of said flange downward onto said planar upper surface of said elongate longitudinal member.

4,327,891

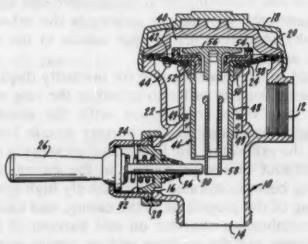
FLUSH VALVE DIAPHRAGM HAVING PLASTIC INSERT

Charles S. Allen, River Forest; Charles C. Allen, Oak Brook, and Frederic Lissau, Chicago, all of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.

Filed Jul. 30, 1980, Ser. No. 173,594

Int. Cl.³ F16K *31/145*

U.S. Cl. 251—38 **20 Claims**



7. In a flush valve, a hollow body having an inlet, an outlet and a central throat interposed therebetween with a main valve seat formed on the top of the throat, a diaphragm normally closing the valve seat and extending across the body to define an upper chamber, a by-pass in said diaphragm to equalize pressure between the inlet and the upper chamber, an opening in the diaphragm allowing fluid communication between the upper chamber and the outlet, a relief valve attached to the diaphragm and normally-closing said opening, said relief valve being actuatable to initiate a flush by relieving the pressure in the upper chamber which permits the inlet water pressure to flex the diaphragm upwardly, thereby opening the valve seat until the buildup of pressure in the upper chamber re-seats the diaphragm, the improvement comprising a diaphragm including inner and outer peripheral reinforcing means at its point of

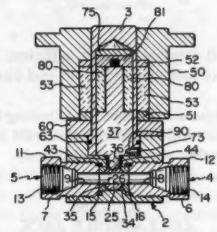
attachment, a plurality of spaced, rigid sections positioned intermediate said inner and outer reinforcing means and connecting means integral with said rigid sections for connecting said rigid sections together comprising at least one continuous rib attached to said rigid sections at spaced locations thereon, said connecting means permitting flexibility both in the plane of the diaphragm and perpendicular to the diaphragm.

4,327,892

NORMALLY MAGNETICALLY ACTUATED VALVE WITH NOVEL NONMAGNETIC OVERRIDE

Robert F. Ruyak, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Filed Sep. 8, 1980, Ser. No. 185,005
Int. Cl.³ F16K *31/08*
U.S. Cl. 251—65 **11 Claims**



1. A valve comprising

a pressurizable valve body having two fluid passages and a central space between said passages,

a closure element positioned within said central space which may be brought into a position stopping communication between the fluid passages,

a nonmagnetic tubular pressurizable bonnet having an extended axis passing through the central space, said bonnet having a closed end away from the central space,

means for clamping said bonnet to said valve body in pressure sealing relationship such that said bonnet normally will not rotate and such that said clamping means may be loosened so that the bonnet can rotate and remain in pressure sealing relationship with the valve body,

said valve body and bonnet defining a central opening connecting the interior of the bonnet and the central space,

a cylindrical drive magnet holder coaxial with and surrounding said tubular bonnet, said holder mounted rotatably thereto, said holder carrying magnets defining an even number of north and south magnetic poles,

a rotatable control shaft projecting through said central opening, said shaft operatively connected to said closure element such that turning shaft positions said closure element, said shaft having mounted thereto driven magnet assembly comprising magnets defining an equal number of north and south magnetic poles such that when the cylindrical holder is turned, the driven magnet assembly and control shaft will follow,

the control shaft and mounted driven magnetic assembly being rotationally supported in the bonnet substantially coaxial therewith,

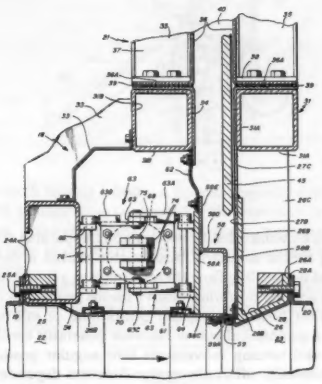
stop means extending between said bonnet and said driven magnet assembly such that while the magnetic assembly can be freely turned a given angular distance without interference by said extending means further rotation is restricted and such that by loosening the clamping means and turning the bonnet through a maximum of said angular distance will cause the shaft to turn permitting manual opening or closing of the valve.

4,327,893

GUILLOTINE DAMPER

Lothar Bachmann, Auburn; John A. Powell, Yarmouth, and Ralph W. Turner, Brunswick, all of Me., assignors to Bachmann Industries, Inc., Lewiston, Me.

Filed May 29, 1980, Ser. No. 154,476
Int. Cl.³ F16K *39/04*
U.S. Cl. 251—159 **15 Claims**

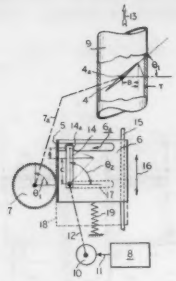


1. A damper for use in blocking the flow of fluid through a duct, said damper including a chamber to which upstream and downstream duct sections are to be connected and provided with interconnected upstream and downstream wall structures, a blade mounted within said chamber for movement between a first position in which the flow path through the chamber is unobstructed and a second position in which the flow path is blocked, means operable to move said blade between said positions, the downstream wall structure including a seat continuously surrounding the flow path, a thrust frame within said chamber on the upstream side of the blade path and including a seal for continuous engagement with said seat or the blade, and means operable to move said frame between a first operative position in which the seal is in engagement with the seat or the blade when in the second position thereof and a second position in which the seal is out of the blade path, said means including a series of actuating devices spaced apart in a transverse plane about the flow path, each device including a series of spaced toggle joints pivotally connected to the upstream wall structure and said frame, resilient means, fluid pressure operated means, means combining said fluid pressure operated means and said resilient means as a unit but in opposition to each other and including a common connection with said series of toggle joints, each unit mounted on said upstream structure and so disposed that the forces exerted by the opposing means thereof are in directions parallel to the blade path, said resilient means so actuating said toggle joints as to thrust said frame into the first position thereof, and valve controlled means operable first to deliver fluid to each fluid pressure operated means under an operating pressure effective to overcome the resistance of said resilient means thereby to retract said frame to establish the second position thereof and then to relieve said fluid pressure operated means of said operating pressure.

4,327,894
LINEARIZED CONTROLLED VALVES

James H. Ewing, Brockton, Mass., and William R. Clark, Hampstead, N.H., assignors to MKS Instruments, Inc., Burlington, Mass.

Filed May 21, 1980, Ser. No. 152,037
Int. Cl.³ F16K *31/528*
U.S. Cl. 251—233 3 Claims



1. Linearized controlled flow-regulating apparatus comprising valving means angularly positionable within a flow passageway and controlling flow therethrough as a function of the cosine of its angular positions, motive means producing turning movements for powering angular positioning of said valving means, and a mechanical cosine-function generator mechanism translating said turning movements into angular positionings which substantially offset the cosine-function dependency of said valving means in respect of its control of said flow over at least part of its operating range, said mechanism including a linkage having a portion angularly movable at a radial distance from the axis of said turning movements and formed as part of a crank undergoing said turning movements imparted by said motive means, whereby turning of said portion in relation to a given position effects a substantially cosine-function advancing and retreating type movement of said portion in relation to said position, and said mechanism further including means converting said advancing and retreating type movement of said portion into said angular positionings of said valving means, said converting means including a movable member connected with said crank through a joint allowing at least relative angular movement therebetween, said joint including a cam slot in said movable member extending substantially parallel with the planes of turning movements swept by said crank, and said crank having an arm including a cam follower element fixed therewith and disposed within said cam slot, said movable member being slidable in directions of said advancing and retreating type movement and in accordance with a cosine-related function of said turning movements.

4,327,895
BALL VALVE

James J. Blumenkranz, Los Angeles, and Rowland G. Hall, Burbank, both of Calif., assignors to R & G Sloane Manufacturing Co., Sun Valley, Calif.

Filed Aug. 8, 1980, Ser. No. 176,335
Int. Cl.³ F16K *5/06*
U.S. Cl. 251—315 17 Claims

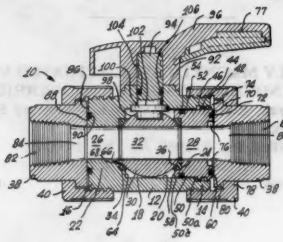
1. A ball valve comprising:

a valve body having a first end and a second end with an internal axial chamber extending between said ends, and having internal threads at said first end;

a ball having a flow passage, said ball being disposed within said chamber and spaced from said first and second ends, and being rotatable to permit selective placement of said ball flow passage in and out of substantial axial alignment with said chamber;

seal means located within said chamber between said ball and said first end, and adjacent said ball;

an axially movable seal carrier disposed within said chamber between said seal means and said first end, said carrier having external threads for engaging said internal threads of said body, with an axial thread clearance between said



external and internal threads sufficient to permit linear movement of said carrier within said chamber;

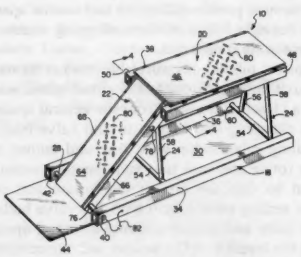
and

seal carrier adjustment means for adjusting the axial position of said carrier within said chamber, said adjustment means being adjustably attached to said body.

4,327,896
COLLAPSIBLE JACK

Rickey E. Whitehead, Rte. 1, Fairview, Mo. 64842

Filed Nov. 12, 1980, Ser. No. 205,947
Int. Cl.³ E02C *3/00*
U.S. Cl. 254—88 11 Claims



1. A collapsible jack movable between upright and collapsed positions, comprising:

a base member including a base plate and side rails coupled to and extending upwardly from said base plate, said base side rails having openings adjacent front ends thereof aligned along an axis perpendicular to said base side rails;

a support member including a support plate and side rails coupled to and depending from said support plate;

front and rear pivoting means for coupling said base member and said support member, each said pivoting means including upper and lower pivot rods extending perpendicular to said side rails and interconnected by rigid brace means fixedly coupled to said pivot rods at locations spaced inwardly from opposite ends thereof, said lower pivot rods having opposite ends journaled in said base side rails, said upper pivot rods having opposite ends journaled in said support side rails;

a ramp member including a ramp plate and side rails coupled to and depending from said ramp plate, said ramp side rails having upper ends journaled to said front upper pivot rod and lower ends having openings aligned along an axis perpendicular to said ramp side rails, said ramp openings

being aligned with said base openings in said upright position; and

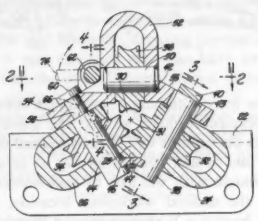
a locking bar removably received in said ramp and base openings to lock the jack in said upright position.

4,327,897

CABLE GUIDE FOR POWERED WINCH

Roger R. Smith, Imlay City, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 28, 1980, Ser. No. 134,860
Int. Cl.[3] B66D 3/08
U.S. Cl. 254—395 2 Claims



1. In a vehicle having a powered winch-cable mechanism, the improvement comprising a cable guide: said cable guide comprising a main frame adapted for mounting on the vehicle bumper; first and second upstanding pins (38, 44) carried by the main frame in acutely angled relation to each other; first and second cable guide rollers rotatably encircling respective ones of the pins; said first pin including a main section passing through the associated roller and an auxiliary section bent at an angle of approximately ten degrees to the main section; an auxiliary frame swingably mounted on the auxiliary section of the first pin for swinging movement therearound; said auxiliary frame having a first normal position overlying the main frame and a second cable-insertion position swung away from the main frame; a third pin carried by the auxiliary frame; a third cable guide roller rotatably encircling said third pin; said rollers having concave peripheral edges adapted to guidably engage segmental surface areas of a cable whose axis is at the intersection of the roller rotational planes, said rollers having their respective rotational planes radiating from the cable axis; said third roller being mounted in the auxiliary frame at a twelve o'clock position directly above the cable axis, said first and second rollers being mounted in the main frame at the four o'clock and eight o'clock positions relative to the cable axis; and movable latch means operable to releasably retain the auxiliary frame in its normal position wherein the third roller is in its twelve o'clock position; said auxiliary frame being swingable around the auxiliary section of the first pin (38) to its cableinsertion position; the bent section of the first pin being oriented so that when the auxiliary frame is moving from its normal position it takes a slightly inclined path such that edge areas of the third roller will clear the cable surface.

4,327,898

TRAVELING TORCH

Gerald B. Grant; Roger J. Madsen, and David A. Laing, all of Denton, Tex., assignors to Victor Equipment Company, Denton, Tex.

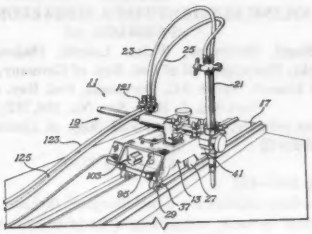
Filed Apr. 3, 1981, Ser. No. 250,633
Int. Cl.[3] B23K 7/10
U.S. Cl. 266—67 14 Claims

1. A traveling torch comprising:

a. a carriage mounted on at least three wheels including at least one driving wheel and adapted to traverse a track;

b. power means for moving said carriage along said track, said power means being carried by said carriage with a major portion of its weight toward a first side;

c. a torch holding means for holding a torch; said torch holding means being carried by said carriage with a major portion of its weight toward said first side; said torch holding means being asymmetrically mounted and extending above and across said carriage so as to carry said torch laterally beyond the second side of said carriage;



d. a torch having a body, a tip and respective fuel and oxygen passageways connected with respective fuel and oxygen conduit means for conveying respective fuel and oxygen to respective fuel and oxygen passageways in said torch;

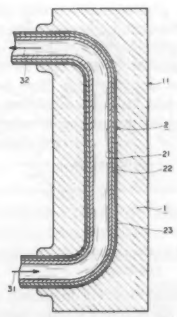
e. flexible fuel and oxygen conduit means connected with respective fuel and oxygen sources and said fuel and oxygen conduit means on said traveling torch.

4,327,899

STAVE COOLING DEVICE HAVING UNWELDED DOUBLE TUBE

Gyoichi Suzuki, Tokyo; Teruo Shimotsuma, Yokohama; Masaaki Higuchi, Yokohama; Tsunenori Sugawara, Yokohama, and Takeshi Yano, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1980, Ser. No. 136,755
Claims priority, application Japan, Apr. 9, 1979, 54/33726
Int. Cl.[3] C21B 7/10
U.S. Cl. 266—193 4 Claims



1. In a stave cooling device having a cooling tube cast-mounted in a main body of a castable metal such that said cooling tube and said main body are not welded together, and said cooling tube serves as a coolant passage, the improvement wherein said cooling tube comprises a double drawn steel tube including an inner tube made of a steel having a composition containing 0.20 to 0.38% of equivalent carbon and an outer tube made of a steel having a composition containing 0.15 to 0.25% of equivalent carbon, wherein an outer surface of said double tube is covered with an alumina coating having a thickness between 0.08 and 0.25 mm, and wherein said alumina

coated double tube is cast-mounted in said main body made of a spheroidal graphite cast iron such that said double tube and said main body are not welded together, and ends of said double tube are extended to the outside of said main body.

4,327,900

COOLING ELEMENT FOR A METALLURGICAL FURNACE

Arno Engel, Dortmund; Walter Laucht, Hagen, and Wille Tiedtke, Dortmund, all of Fed. Rep. of Germany, assignors to Estel Hoesch Werke AG, Dortmund, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,782

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939352

Int. Cl.³ C21B *7/10*

U.S. Cl. 266—193 **10 Claims**

1. Cooling element for a metallurgical furnace, particularly for a blast furnace, comprising a body of cast material and having a major surface adapted to face the interior of the furnace and transversely spaced opposite marginal portions; steel cooling medium tubes embedded in said body; refractory material protecting said major surface and adapted to be anchored to portions of the furnace; and a plurality of alternating teeth and gaps formed in each of said marginal portions for reducing substantially wear of said marginal portions on said body, said cooling medium tubes admitting cooling medium into said body in two inlet planes and discharging the medium from the body in two outlet planes.

4,327,901

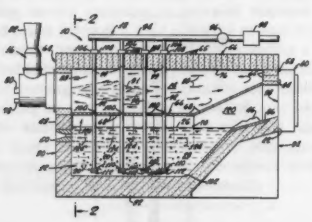
MELT AND HOLD FURNACE FOR NON-FERROUS METALS

George S. Kaiser, 18921 Valley Dr., Villa Park, Calif. 92667

Filed Mar. 10, 1980, Ser. No. 128,668

Int. Cl.³ C21C *7/00*

U.S. Cl. 266—217 **12 Claims**



1. A melt and hold furnace for non-ferrous metals comprising:

(a) a melt and hold chamber including a preheat hearth and outlet means for drawing molten metal from said melt and hold chamber, said preheat hearth having an inlet means for introducing solid metal into said preheat hearth;

(b) a sealed combustion chamber proximate said melt and hold chamber and separated therefrom by radiation plate means for preventing combustion products from contacting the molten metal and for radiating heat from the combustion chamber into the melt and hold chamber to melt metal therein said radiation plate means being spaced apart from the molten metal; and,

(c) non-oxidizing gas means for promoting convection heat transfer within the molten metal.

4,327,902

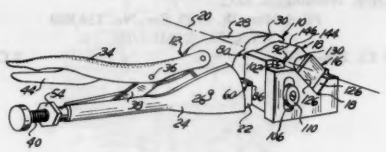
COAXIAL WORKPIECE ARRANGER FOR ROTARY WORK HOLDERS OF CONTOUR TURNING MACHINES

Richard Holmes, Harrisville, Mich., assignor to Dawson Carbide Industries, Inc., Warren, Mich.

Filed Jul. 30, 1980, Ser. No. 173,593

Int. Cl.³ B25B *1/00*

U.S. Cl. 269—6 **5 Claims**



1. A locator for positioning a workpiece between a pair of separable workpiece holders so that the workpiece is interposed between the holders with its axis aligned with the axis of said holders, one of said holders having an enlarged locating portion concentric with the axis of said holders and axially spaced from the desired workpiece location, comprising a locator block having a V-shaped groove therein defined by a pair of angularly related surfaces adapted to engage the enlarged locating portion of said one holder, the pair of surfaces intersecting in an apex located a predetermined radial distance from the axis of said holders, a slide block having a V-shaped groove therein defined by a pair of angularly related surfaces adapted to engage the adjacent side surfaces of a workpiece, said surfaces intersecting at an apex, means interconnecting said locator block and said slide block and accommodating relative linear movement therebetween, the apices of the V-shaped grooves in said block being aligned in the direction of linear movement and being relatively adjustable in said direction, means for securing said blocks in an adjusted position, and means for clamping said locator block to said enlarged locating portion of said one holder, a workpiece positioned in the V-shaped groove of said slide block when said locator block is so clamped lying between said holders with the slide block being adjusted in said single direction relative to said locator block so that the axis of the workpiece as positioned in the V-shaped groove of the slide block is co-axial with the axis of said holders.

4,327,903

WORK CLAMPING VISE

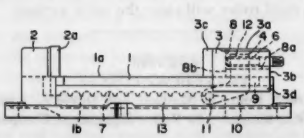
Shosuke Kawasaki, 2400-15, Ohaza Kita Toyama, Komaki City, Aichi Prefecture, Japan

Filed May 23, 1980, Ser. No. 152,792

Claims priority, application Japan, May 25, 1979, 54/071010[U]

Int. Cl.³ B25B *1/02*

U.S. Cl. 269—194 **8 Claims**



1. A vise comprising:

an elongated base including a stationary clamping portion at one end and having its widthwise center formed with a longitudinal groove which extends in the longitudinal direction through the upper and lower sides of said base, the lower side of said base being formed with a plurality of

transverse grooves which extend at both sides of said longitudinal groove and in parallel with one another;

a movable clamping portion slidably mounted on said base for movement toward and away from said stationary clamping portion, said movable clamping portion having a recess;

a latch means for connecting said movable clamping portion in said base, said latch means including a connecting member having a generally rectangular section and received in the recess of said movable clamping portion, such that said latch means can move within said recess in the longitudinal direction of said base, a generally L-shaped leg made integral with said connecting member and extending from the bottom of said connecting member, and a pin mounted in the free end of said L-shaped leg and engageable with one of said transverse grooves, said connecting member being formed with a threaded hole which is in the moving direction of said movable clamping portion so that a bolt fastened in said threaded hole can have its leading end pushing the side of said recess closest to said stationary clamping portion; and

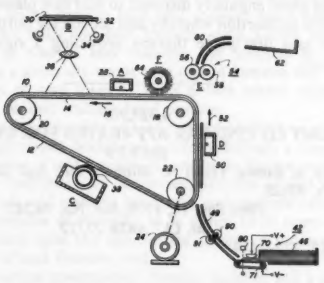
a spring interposed between the rear side of said connecting member and the rear end of said movable clamping portion for biasing said connecting member toward said stationary clamping portion at all times.

4,327,904

ELECTROSTATICALLY ASSISTED RETARD FEEDER METHOD AND APPARATUS

Maurice F. Holmes, Brighton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1980, Ser. No. 145,649
Int. Cl.³ B65H *3/04, 3/52, 7/12*
U.S. Cl. 271—35 **6 Claims**



1. A method of minimizing sheet multi-feeds in a retard feeder having a feed member and a retard member forming a retard nip in the transport path of sheets characterized by the steps of:

(a) sensing a multi-feed; of sheets through the nip and

(b) applying an electrical potential between the feed member and the retard member when a multi-feed is sensed thereby increasing the normal force between these members produced by the resultant electrostatic attraction therebetween to cause separation of the sheets in the nip.

4. In a retard feeder having a substrate separation member and a retard member that cooperate to form a retard nip for the passage of substrates therethrough, the improvement characterized by:

sensing means located downstream of said nip and adapted to sense multi-feeding of substrates through said nip; and

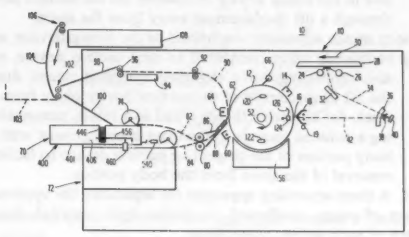
energizing means adapted to be actuated by a signal from said sensing means upon said sensing means sensing a substrate multi-feed, said energizing means upon receipt of said multi-feed signal applies an electrical potential between the feed member and the retard member, thereby increasing the coefficient of friction between the feed member and retard member by the increase in the normal force therebetween due to an increase in the electrostatic attraction between the feed member and the retard member.

4,327,905

DUPLEX COPYING APPARATUS

Arnold Schonfeld, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,392
Int. Cl.³ B65H *3/30*
U.S. Cl. 271—3.1 **4 Claims**



1. An apparatus for holding paper in a duplex copying machine comprising:

a container removably connected to said duplex copying machine for holding a stack of paper having a plurality of sheets;

alignment means mounted within said container for aligning the edges of said paper sheets within said stack, said alignment means further comprising an extended portion extending partially over the top sheet of paper in said stack when said stack is placed in said container, whereby said stack of paper is partially confined within said container;

an intermediate support plate within said container upon which said stack of paper rests when placed in said container;

biasing means connected to said intermediate support plate for biasing said stack of paper against said extended portion; and

automatic lowering means connected to said intermediate support plate for lowering said intermediate support plate with said stack of paper thereon to a remote position against the force of said biasing means in response to a duplex command from said machine, whereby sheets of paper containing simplex copying and requiring duplex copying can be placed on the top of said stack of paper under said extended portion.

4,327,906

SHEET SEPARATING APPARATUS

Eckhard Fröhlich, Ludwigsburg, and Günter Mattka, Marbach, both of Fed. Rep. of Germany, assignors to STAHL GmbH & Co., Ludwigsburg, Fed. Rep. of Germany

Continuation of Ser. No. 885,226, May 2, 1978, abandoned. This application Jun. 11, 1980, Ser. No. 158,413
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—103 **8 Claims**

1. A sheet separating apparatus for separating the uppermost sheet of paper, cardboard, or the like, from a stack of such sheets, comprising:

at least one suction device;

a lifting device, which produces a drive for each suction device;

each suction device being mounted to the lifting device for reciprocal movement by the lifting device;

each suction device and said lifting device having vacuum chamber means;

each said suction device including a body portion having at least one suction channel, forming part of its vacuum chamber means through which a suction pressure acts to draw the uppermost sheet from the stack into engagement with the body portion and retain the sheet in engagement with the body portion during subsequent transporting of the sheet away from the stack, and control means connected to the vacuum chamber means of the lifting device, said control means being activated by a pressure drop occuring in the vacuum chamber means of the suction device, produced by the engagement of the uppermost sheet to the body portion, causing the suction in the vacuum chamber means of the lifting device to become effective in the lifting device to thereby lift the suction device through a lift displacement away from the stack;

stop means adjustably connected to the lifting device; and

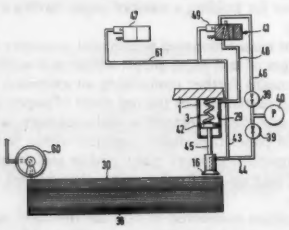
a ventilating valve connected to each suction device, each said ventilating valve engaging said stop means, during the lift displacement of the suction device away from the stack, for actuation thereby, and as a result, communicating a reduced vacuum to the sheet in engagement with the body portion of the respective suction device to facilitate removal of the sheet from the body portion.

5. A sheet separating apparatus for separating the uppermost sheet of paper, cardboard, or similar light material, from a stack of such sheets, comprising:

a vacuum source;

a suction line connected to the vacuum source;

a suction device connected to the vacuum source by the



suction line, said suction device including a body portion containing at least one suction channel through which a suction pressure from the vacuum source acts to draw the uppermost sheet from the stack into engagement with the body portion and retain the sheet in engagement with the body portion during subsequent transporting of the sheet away from the stack;

a lifting device for lifting the suction device and an engaged sheet with a substantially vertical limited stroke, including: a supporting body connected to the suction device; a lifting piston connected to the supporting body; a substantially vertically extending cylinder slidably receiving said lifting piston; and biasing means for biasing said lifting piston into a lower position; said suction device being exposed to controlled upward movement by the lifting device;

a pneumatically controlled slide valve;

a supply line connecting the slide valve to a source of a pneumatic actuating medium;

a further supply line connecting the slide valve to the cylinder of the lifting device on only one side of said lifting piston;

and a control line connected between the suction line and a control element of said slide valve, whereby a pressure drop occuring in said at least one suction channel, produced by the engagement of the uppermost sheet with the body portion, causes the slide valve to connect the actuating medium source to the cylinder through the further supply line to thereby lift the suction device away from the stack.

4,327,907

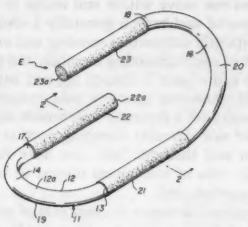
PORTABLE EXERCISE DEVICE

Daniel A. DeVries, 7749 Olive, Fair Oaks, Calif. 95628

Filed Sep. 5, 1980, Ser. No. 184,280

Int. Cl.³ A63B *23/00*

U.S. Cl. 272—93 **9 Claims**



1. A portable exercise device comprising an elongated body member of rigid material so as to rigidly support the weight of an exerciser using the device, said body member having a substantially straight central portion forming a handgrip area, a first U-shaped portion emanating directly from one side of said central portion and terminating in a first straight free end leg portion, a second U-shaped portion emanating directly from the other side of said central portion and terminating in a second straight free end leg portion, each of said leg portions froming handgrip areas for the exerciser, said first U-shaped portion and said central portion lying in a second plane, said second U-shaped portion and said central portion lying in a second plane angularly disposed to said first plane and toward said first leg portion whereby said second leg portion is spaced above said first plane thereby providing a rigid triangular structure.

4,327,908

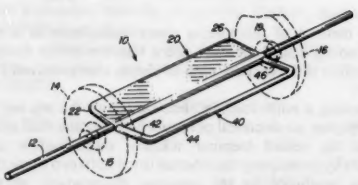
WEIGHT LIFTING BAR APPARATUS FOR EXERCISING BICEPS

Jeffrey S. James, 11248 N. Biltmore Dr., Apt. 208, Phoenix, Ariz. 85029

Filed Sep. 10, 1979, Ser. No. 74,247

Int. Cl.³ A63B *21/12*

U.S. Cl. 272—119 **12 Claims**



1. Weight lifting apparatus for exercising the biceps muscles, comprising, in combination:

a primary bar for holding weights;

support frame means secured to one side of the primary bar and adapted to rest on the forearms of a user, said support frame means including

a first support arm secured directly to and extended from the primary bar,

a second support arm secured to and extending from the primary bar and spaced apart from the first support arm, and

a support leg secured to and extending between the ends

of the first and second support arms for resting on a user's forearms during an exercise; and

holding frame means secured to the primary bar and extending a substantiall distnce on the opposite side of the bar for grasping by the hands of a user during an exercise.

4,327,909

RESILIENT SLING

Alonzo J. Neufeld, 1650 N. Parway Dr., Glendale, Calif. 91206

Filed Oct. 24, 1980, Ser. No. 200,445

Int. Cl.³ A63B *21/02*

U.S. Cl. 272—137 **2 Claims**

1. A resilient sling for use with the arm of a wearer whereby a low energy exercise of the arm is possible within the sling wherein the sling includes:

a neck portion adapted to encircle the back of the neck of said wearer and having two ends projecting downwardly in front of said wearer;

a resilient band portion forming a continuation of said neck portion between said ends of said neck piece creating an endless loop;

a forearm strap holder means separate from said endless loop and of a width greater than said resilient band portion having two ends and said forearm strap holder means adapted to receive and maintain the forearm of said wearer in a generally single area of said forearm and said two ends of said forearm strap holder means slidably mounted on said resilient band portion;

and resilient band capable of being stretched from an at rest position generally horizontal position through a low energy exercise of said forearm downwardly limited only by anatomic limitations by downward pressure of said forearm against said resilient band, and said resilient band of such a modulus of elasticity as to return to its normal at rest position upon the appropriate release of downward pressure of said forearm; and

said neck portion comprising a tubular member and a strap portion of a length greater than said tubular member being shiftable therethrough and with ends of said strap member projecting beyond the ends of said tubular member.

4,327,910

ARM WRESTLING DEVICE

Glenn E. Mackie, Star Rte. Box 117-A, Limestone, Me. 04750

Filed Mar. 7, 1980, Ser. No. 128,270

Int. Cl.³ A63B *21/02*

U.S. Cl. 273—1 GI **3 Claims**

1. Arm wrestling apparatus comprising

a table provided with an elbow supporting flat surface for the elbows of a pair of contestants,

sensing means mutually spaced on said surface arranged to be engaged by the hand, wrist or forearm of a losing contestant, and

means responsive to said sensing means for signalling the scoring of a point in favor of the winner, said sensing means comprising a pair of angularly adjustable pads each hingedly mounted on said table surface and adapted to move from an elevated position to a depressed position when engaged by a portion of the arm of a contestant and said apparatus including rod means interconnecting said pads and said point scoring means.

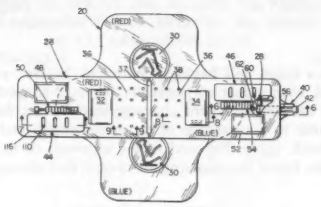
2. Arm wrestling apparatus comprising

a table with an elbow supporting flat surface for the elbows of a pair of contestants,

mutually spaced yieldable pads arranged on said surface to be engaged and depressed by the hand, wrist or forearm of the losing contestant,

a signalling device to signal each point scored,

a scoring device to keep score for each contestant,



a counting device to count the aggregate number of points scored,

linkage interconnecting said pads and said devices to actuate the latter,

retractable spoilers for said surface,

means for locking said yieldable pads and interconnecting linkage against movement and

means to activate said locking means after a predetermined aggregate number of points have been scored.

4,327,911

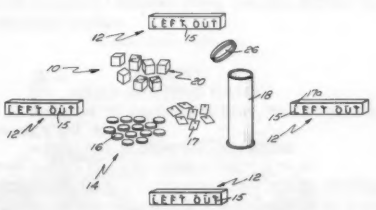
GAME APPARATUS UTILIZING A SIGNALLING MEANS

George W. Ptaszek, P.O. Box 260, Pascoag, R.I. 02859, and Robert B. Romine, Box 235, Rte. 1, Lonoke, Ark. 72086

Filed Aug. 4, 1980, Ser. No. 175,332

Int. Cl.³ A63F *9/00*

U.S. Cl. 273—1 GE **10 Claims**



1. A signalling game apparatus comprising in combination:

an unmarked playing surface;

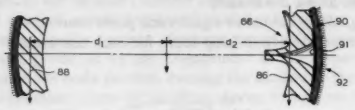
a means for color signalling;

a plurality of individually moveable playing chips color coded as the colors of said signalling means distributed over and removeable from the playing surface by each player;

a means for forming a random array of said signalling means; and

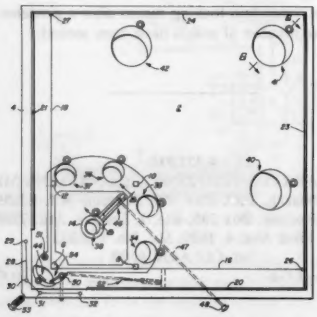
a plurality of player individual scoring means, one for each player, comprising a series of indicia and removable means for covering each indicia.

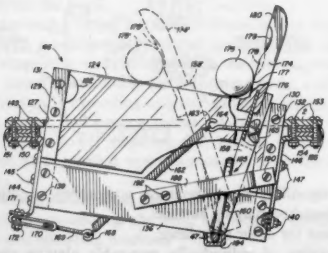
4,327,912
TENNIS BALL
Allan C. Hoffman, 2891 Rumsey Dr., Riverside, Calif. 92506
Continuation-in-part of Ser. No. 895,117, Apr. 10, 1978, Pat. No. 4,240,630. This application Dec. 19, 1980, Ser. No. 218,169
Int. Cl.³ F16K *15/16*; A63B *39/04*
U.S. Cl. 273—61 R **10 Claims**



1. In a tennis ball having a spherical, hollow, rubber shell covered with a pair of generally figure-8-shaped pieces of fabric, the improvement characterized by the fabric being permeable to the passage of air therethrough and by a one-way check valve disposed in the sidewall of the shell beneath the fabric for allowing air to pass therethrough into the ball.

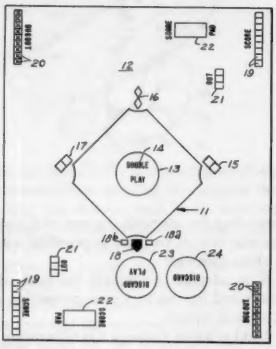
4,327,913
BASEBALL GAME APPARATUS
George E. Bock, P.O. Box 17958, Fountain Hills, Ariz. 85268
Filed Oct. 20, 1980, Ser. No. 198,940
Int. Cl.³ A63F *7/14, 7/06*
U.S. Cl. 273—89 **8 Claims**





1. A baseball game apparatus comprising in combination:
a. a playing board including indicia designating home plate and designating a pitcher's mound;
b. an inclined, slotted track extending above said playing board proximate said indicia designating said pitcher's mound for receiving a ball to be pitched, said slotted track having front and back ends, said front end being higher than said back end;
c. a pivotally mounted pitching member movable within said slotted track; and
d. biasing means for urging said pitching member toward the front end of said slotted track for pitching the ball in a continuous, lofted trajectory above said playing board from a point proximate said pitcher's mound to a point relatively proximate home plate.

4,327,914
BASEBALL GAME APPARATUS
James R. Dowell, 5457 Peacock Ln., Riverside, Calif. 92505
Filed Jul. 23, 1980, Ser. No. 171,430
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—93 C **3 Claims**



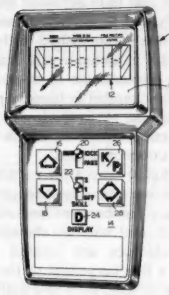
1. A baseball game comprising a game board including a baseball diamond, a plurality of mechanical playing pieces to be positioned on said game board for scoring the game, and a deck of circular playing cards for indicating the plays, said plurality of mechanical playing pieces are of cylindrical and solid configuration, with a human face inscribed on the top and half of said plurality of mechanical playing pieces include an elongated slot in the right side of their outer peripheries, and the other half of said plurality of mechanical playing pieces include an elongated slot in the left side of their outer peripheries, and in the elongated slots are a pivotal and simulated baseball bat, which is secured, at one end, by pivot pin means, in the bottom of the elongated slots, and one half of said plurality of mechanical playing pieces are used by one player, and the other half are used by the opposing player, said plurality of mechanical playing pieces being designated as right hand batters and left hand batters.

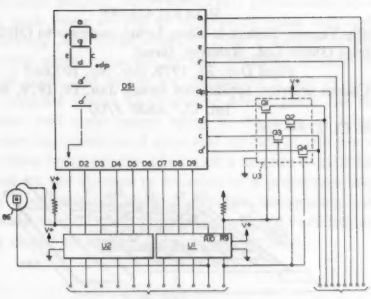
4,327,915
DISPLAY PANEL FOR AN ELECTRONIC GAME AND METHOD OF EMPLOYING SAME
Eric Bromley, West Simsbury, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.
Continuation of Ser. No. 921,347, Jul. 3, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,698
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—94 **10 Claims**

1. In an apparatus for simulating a sports-action game that includes:
A. a display panel providing a playing area with a transparent planar surface and including an array of light-emitting devices disposed below said playing area and operable to emit light to provide a visual simulation representative of the simulated sports-action game by the application of electrical signals thereto;
B. operational-circuit means operatively connected to said display panel playing area and including means for generating and transmitting electrical signals to at least some of

said light-emitting devices below said playing area to illuminate said devices to simulate at least one object, some of said devices being illuminated sequentially to simulate at least one moving object whose simulated motion on said playing area represents the play action of said simulated sports-action game, said operational-circuit means further including means for monitoring said play action to record information concerning the status of said simulated game and for generating and transmitting electrical signals representative of said status information; and

C. a control board including a multiplicity of manually operable control elemen's, said control board being connected to said operational-circuit means for transmission of signals to said operational-circuit means through operation of said control elements, said means for generating and transmitting signals to said light-emitting devices being arranged to produce manually controlled movement of at least one of said simulated objects in said play-





ing area in response to signals transmitted from said control board, the improvement wherein:

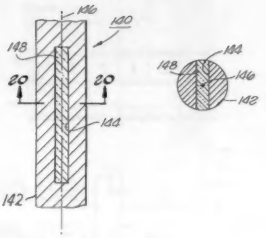
at least some of said light-emitting devices are seven-segment displays with decimal points therebetween, at least some of said light-emitting devices below said playing area are alternately illuminated in a plurality of modes through action of said operational-circuit means resulting from signals from said manually operable control elements with object simulating signals being transmitted to said devices in one mode and status information signals being transmitted thereto in another mode, illumination in said one mode simulating said object with said manually operable control elements producing manually controlled movement of said object on said playing area during the period of play action, illumination in said another mode displaying said status information in said playing area in response to said electrical signals from said play action monitoring means upon termination of said play action, illumination in said one mode by said operational-circuit means effecting illumination only of the horizontal segments of the seven-segment displays and of the decimal points to provide said simulated objects, illumination in said other mode by said operational-circuit means effecting illumination of both horizontal and vertical segments of said devices as well as such decimal points as required.

4,327,916

GOLF CLUB

Yukio Shiratori, 15432 Harvard Blvd., Gardena, Calif. 90247

Division of Ser. No. 915,618, Jun. 15, 1978, Pat. No. 4,212,467.
This application Feb. 11, 1980, Ser. No. 120,051
Int. Cl.³ A63B *69/36, 53/10*
U.S. Cl. 273—163 A **4 Claims**



1. In a golf club, the improvement comprising, in combination:

a club head;

an elongated longitudinally extending substantially cylindrical shaft means having a first end coupled to said club head, and a second end;

a grip means coupled to said second end of said shaft means;

said shaft means having a predetermined longitudinal axis extending between said grip means and said club head; and

said shaft means comprising:

planar walls in planes parallel to each other and parallel to said longitudinal axis defining a slot extending through said shaft means intermediate said club head and said grip means and extending for a predetermined longitudinal length along said shaft means and said walls providing opaque visual indicia means; and

a solid transparent member filling said slot and having a peripheral surface.

4,327,917

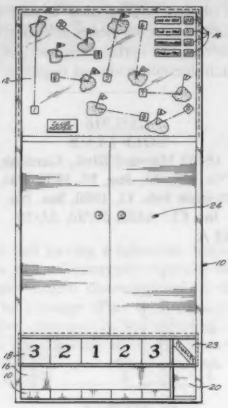
GOLF PUTTING GAME

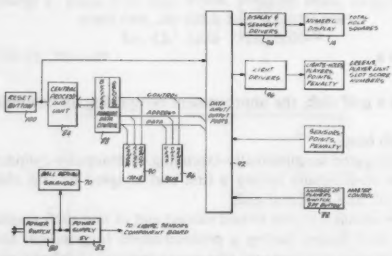
William L. Bagley, 8250 Lankershim Blvd., No. 3 Ivy, North Hollywood, Calif. 91605

Filed Oct. 5, 1979, Ser. No. 82,288
Int. Cl.³ A63B *67/02*
U.S. Cl. 273—176 FA **10 Claims**

1. A game device comprising: a housing having a base adapted to rest on a horizontal supporting surface and front panel extending upwardly from the base, the front panel having an elongated opening extending horizontally along the base for receiving the ball rolled toward the housing on said supporting surface, a plurality of laterally spaced position sensors positioned in the housing adjacent the opening in the housing for sensing movement of a ball through the opening, the ball activating particular ones of the sensors depending on the lateral position of the ball relative to the housing as it enters the opening, means in the housing for sensing when the speed of a ball entering the housing through the opening exceeds a predetermined velocity, said speed sensing means including means for defining said predetermined velocity means responsive to said position sensors for indicating a numerical value dependent on

which of said position sensors are activated by the ball, and means responsive to said means sensing the speed of the ball for





modifying the indicated numerical value when the speed of a ball exceeds said predetermined velocity.

4,327,918

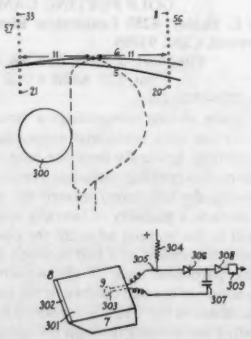
APPARATUS FOR TRAINING GOLF PLAYERS

David B. Foster, Windlesham, England, assignor to Learning Games Limited, London, England

Continuation-in-part of Ser. No. 806,588, Jun. 15, 1977, Pat. No. 4,146,230. This application Feb. 8, 1979, Ser. No. 10,365

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—186 R **2 Claims**



1. In golf training apparatus comprising:

(a) a base member having an impact area over which a golfer may swing a golf club to strike a target ball carried in the impact area;

(b) a light source arranged to direct light onto the impact area to cause a shadow of the golf club head to fall onto the impact area as the club swings across the area;

(c) a plurality of photodevices distributed in said area so as to receive light from said light source and which may be shadowed momentarily during the passage of the club across the impact area;

(d) signal processing means for correlating signals received from said photodevices during the passage of the golf club over the impact area to provide data relating to an impact of the club on the target ball, the improvement consisting in that said photodevices include

(e) first and second transverse photodevices for the detection of club head direction, said first and second photodevices each comprising:

(i) a body enclosing a chamber and having an aperture therein defining a slit, the internal surfaces of the chamber being such that light admitted into the chamber via the slit is reflected in such a manner that a uniform internal light flux is established in the chamber;

(ii) a photodetector mounted in said chamber whereby the output of the photodevice in response to the internal light flux of the chamber is linearly proportional to the extent to which the slit is shadowed;

(iii) a peak detection circuit to which the output of said photodevices connected, and

(iv) an analog-digital converter to which the output of said peak detection circuit is connected and operative to provide a binary number representative of the length of the slit masked, and wherein the slits of said first and second photodevices are located symmetrically on either side of a line tangential to the target ball and at right angles to an ideal path of a golf club head when it impacts the target ball.

4,327,919

BOARD GAME

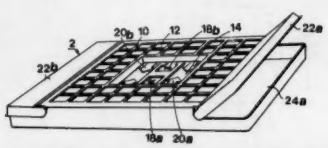
Philip Vennor, Rishon-le-Zion, Israel, assignor to ORDA Industries (1969) Ltd., Rehovot, Israel

Filed Dec. 27, 1979, Ser. No. 107,663

Claims priority, application Israel, Jan. 19, 1979, 56465

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—236 **9 Claims**



1. A board game for two players, comprising a playing board, and a set of playing pieces for each player; said playing board being divided into a rectangular matrix of 8-by-8 squares with the central rectangular area undivided into squares but being of square configuration and occupying the area of a matrix of 4-by-4 squares, such that the squares in the matrix total 48 arranged as an outer peripheral series of 28 squares and an inner peripheral series of 20 squares circumscribing the central undivided area, whereby there are two matrix squares in each row between the outer boundaries of the central area and the outer boundaries of the matrix squares; said set of playing pieces for one player being distinguishable from that of the other; each set including at least three different types of playing pieces carrying markings indicating different strengths relative to each other, such that the first type is indicated as stronger than the second type, which is indicated as stronger than the third type, which in turn is indicated as stronger than the first type, the marking on the first type of playing pieces

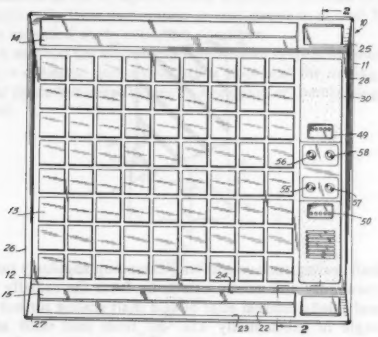
indicating "scissors", the marking on the second type of playing pieces indicating "paper", and the marking on the third type of playing pieces indicating "stone".

4,327,920

ELECTROMECHANICAL DECISION MAKING BOARD GAME

James R. Becker, New York; Julius Cooper, New Hyde Park, and Fredric M. Kuriloff, New York, all of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,979
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—238 **4 Claims**



1. An electromechanical decision making board game comprising in combination: a game board element having an upwardly disposed playing surface delineated into plural areas for the accommodation of individual playing pieces; a pair of sets of individual playing pieces selectively positionable upon said areas, each piece having an established value and code means indicating said value available from a surface of said piece; reading means adjacent to said available surface for reading said code, and means for comparing a pair of code means on separate pieces to determine which piece has the higher value; said code means being in the form of plural aligned projections positioned upon said surface of said pieces said projections being positioned in such a manner to establish a 4 bit code by the absence or location of a projection with respect to a plurality of aligned switches comprising, said reading means wherein said plurality of aligned switches are selectively closed by contact with said projections.

4,327,921

PRESSURE BALANCED - CONSTANT ENGAGEMENT FORCE SEAL

Harold L. Reinsma, Dunlap, and Ernest B. Clark, III, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

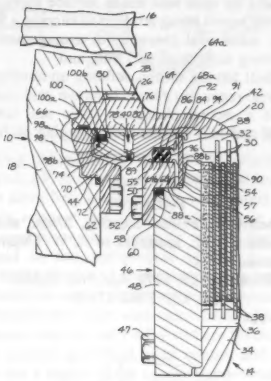
PCT No. PCT/US80/01637, § 371 Date Dec. 8, 1980, § 102(e) Date Dec. 8, 1980
PCT Filed Dec. 8, 1980, Ser. No. 273,884
Int. Cl.³ F16J *15/38, 15/48*
U.S. Cl. 277—3 **10 Claims**

1. A seal arrangement **(40)** for sealing between first and second relatively rotatable structures **(12,14)**, said seal arrangement **(40)** comprising:

a first **(62)** and a second **(64)** annular seal ring respectively having first and second axially opposably disposed engageable sealing face portions **(70,72)**, said second seal ring **(64)** having a radially facing seal surface **(86)**, a first axially facing surface **(82)**, and a second axially facing surface **(84)** opposably arranged relative to and having a smaller axial area than said first axially facing surface;

the second relatively rotatable structure **(14)** having a radially facing seal surface **(54)**;

means **(68)** for sealing between said second seal ring and the second relatively rotatable structure **(14)**, said sealing means **(68)** being in exclusive contact with said radially facing seal surfaces **(54,86)** and having a pressure balancing surface **(96)** which is in fluid communication with said first and second axially facing surfaces **(82,84)**, a portion of



said pressure balancing surface **(96)** acting in concert with said second axially facing surface **(84)** to counterbalance the axial force exerted on said first axially facing surface **(82)** by a fluid; and

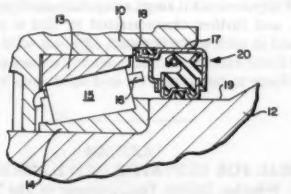
means **(88)** for axially biasing said second seal ring **(64)** toward said first seal ring **(62)** with a substantially constant force for axial movements of said second seal ring **(64)** within a predetermined range.

4,327,922

REUSABLE SEALS WITH DOUBLE SHELL MOUNTINGS

William D. Walther, Kettering, Ohio, assignor to Dayton-Walther Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 97,069, Nov. 23, 1979, abandoned. This application Jun. 25, 1980, Ser. No. 162,857
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—37 **11 Claims**



1. An improved reusable axle seal assembly for a wheel and axle assembly having a wheel bearing in which the wheel hub is formed with an inwardly opening seal-receiving axial surface terminating in an annular seal stop ledge or seat, and in which the axle spindle is similarly formed with an axially extending seal engaging surface in inwardly spaced relation to the corresponding surface of the hub, comprising:

an outer metal hub engaging shell having an outer generally axial surface forming a clearance fit with the corresponding hub seal-receiving surface,

an axle supported inner sheet metal shell having an inner surface which also forms a clearance fit with the spindle seal engaging surface, said inner shell having radially

outwardly turned ends and having an axial length less than that of said outer shell,

a sealing elastomer mounted on said inner shell between said outwardly turned ends and having an operable lip positioned in running engagement with an inside surface of said outer shell,

said outer shell having means therein defining an outwardly opening elastomer ring-receiving recess positioned at a region axially inwardly of the region of running engagement of said lip with said inside surface thereof,

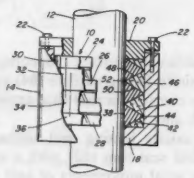
said outer ring recess being adapted to receive a first annular elastomer static seal thereon for engagement with the seal-receiving surface of said hub, and

said inner shell having means defining an annular inwardly opening seal-receiving recess between said ends adopted to receive a second elastomer static seal between said inner shell and said spindle seal engaging surface.

4,327,923
PACKING

Arthur W. Chesterton, Prides Crossing, Mass., and Edgar R. Bernier, Nashua, N.H., assignors to A. W. Chesterton Company, Stoneham, Mass.

Filed Sep. 27, 1979, Ser. No. 79,360
Int. Cl.³ F16J *15/16*
U.S. Cl. 277—124 **10 Claims**



1. A packing assembly comprising a plurality of solid, compressible, non-resilient, low friction packing rings, and a plurality of resilient packing rings, a resilient ring positioned between each pair of solid packing rings, characterized in that said solid rings each have a cylindrical wall defining a sealing surface and a pair of walls extending generally radially at converging angles from said cylindrical wall, said solid rings each abutting adjacent said rings whereby said cylindrical walls of said solid rings define a continuous sealing surface of said solid rings along the axial extent of said solid rings and the angular extensions of said pairs of walls of said solid rings defining spaces between adjacent solid rings away from said cylindrical walls thereof, and further characterized in that a resilient ring is positioned in each space between adjacent solid rings whereby an axial force exerted on said assembly causes a radial component of force to be exerted on said solid rings by said resilient rings.

4,327,924
SEAL FOR ELEVATOR DRIVE MECHANISM

John H. Wheeler, Dallas, Tex., assignor to The Texacone Company, Dallas, Tex.

Division of Ser. No. 73,024, Sep. 6, 1979, Pat. No. 4,265,458.
This application Aug. 22, 1980, Ser. No. 180,450
Int. Cl.³ F10J *15/32*
U.S. Cl. 277—205 **3 Claims**

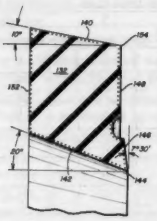
1. A seal for use in an elevator hoist drive mechanism comprising:

an annular body of elastomeric material formed from the group consisting of synthetic rubber such as butyl, viton, nitrile and coated or milled urethane, natural rubber or plastic such as Teflon having a substantially radially disposed external wall;

a compression surface extending angularly radially inwardly and axially internally from the outer radial edge of said external wall at an angle of substantially 80° from said external wall being compressed to form a substantially axially disposed surface after setting said seal in said elevator hoist drive mechanism, said compression surface preforming both the function of sealing and securing said seal to the gear housing of said elevator hoist drive mechanism;

a shaft sealing surface extending angularly radially inwardly and axially internally from the inner radial edge of said external wall at an angle of substantially 110° from said external wall;

a substantially radially disposed internal wall extending radially inward from the radially inner and axially internal edge of said compression surface;



a shaft sealing surface end wall extending angularly radially outwardly and axially externally from the radially inner and axially internal edge of said shaft sealing surface at an angle of substantially 152° 30′ from said shaft sealing surface, the intersection of said shaft sealing surface and said shaft sealing surface end wall defining a shaft sealing lip on said shaft sealing surface for sealing engagement with a rotatable drive shaft; and

a substantially U-shaped notch formed in the seal with the radially outward edge of said notch intersecting the radially inner edge of said internal wall and the radially inner edge of said notch intersecting the radially outer and axially external edge of said shaft sealing surface end wall such that said U-shaped notch permits relatively independent flexure of the shaft sealing lip relative to the remainder of the seal.

4,327,925
DISC BRAKE BOOT SEAL METHOD AND ARTICLE

Ronald J. Alexander, and Dean R. Bainard, both of Gastonia, N.C., assignors to Garlock Inc., Longview, Tex.

Filed Aug. 6, 1979, Ser. No. 63,751
Int. Cl.³ F16J *15/52*; B23P *15/10*
U.S. Cl. 277—212 FB **33 Claims**

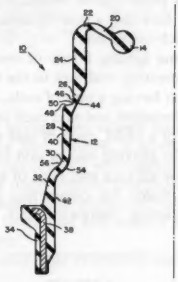
1. A disc brake boot seal for sealing between the bore wall of a cylinder and a piston extending through the bore, comprising:

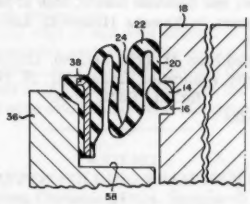
(a) an annular, molded, unitary, one-piece flexible, elastomeric sleeve that is collapsible from an extended, as-molded condition to a collapsed convoluted condition and comprising in its extended condition a plurality of different, annular wall portions serially connected together from a piston sealing end at the axially outer end thereof to a cylinder sealing end at the axially inner end thereof, said piston sealing end having a smaller as-molded inner diameter than that of said cylinder sealing end, said wall portions allowing said sleeve to collapse from said extended, as-molded condition to a collapsed condition, and

(b) at least one of said wall portions including means for interacting with at least one of said wall portions for releasably holding said sleeve in said collapsed condition such that said sleeve does not self extend, and wherein said sleeve includes, in its extended condition, a cylindrical, relatively thick stabilizing wall, an intermediate flex wall

located immediately axially inwardly of said stabilizing wall, thereby being located closer to said cylinder sealing end than is said stabilizing wall, said flex wall being connected to one end of said stabilizing wall and tapering radially outwardly from said one end of said stabilizing wall, and a tapered frustoconical upper flex and rolling wall immediately axially inwardly of and connected to said flex wall and having an inside diameter greater than that of said stabilizing wall, said flex wall including an annular crease on its radially outer surface and said upper flex and rolling wall being invertable about said crease, such that said upper flex and rolling wall inverts and moves from its position in the extended sleeve wherein it extends axially inwardly from said crease to an inverted position in the collapsed sleeve wherein it extends axially outwardly from said crease as said sleeve is moved from its extended to its collapsed condition.

29. A method for assembling a disc brake system including a piston, a cylinder, and a disc brake boot seal for sealing the annular space between the piston and cylinder, comprising the steps of:





(a) molding in its extended condition, an annular, unitary, one-piece, flexible, elastomeric sleeve that is collapsible from an extended as-molded, condition to a collapsed convoluted condition and that includes a plurality of different, annular wall portions serially connected together from a piston sealing end at one end thereof to a cylinder sealing end at the other end thereof, at least one of said wall portions having means for interacting with at least one of said wall portions for releasably holding the sleeve in its collapsed condition such that it does not self-extend;

(b) installing said sleeve in said cylinder of said disc brake system;

(c) collapsing said sleeve into its collapsed convoluted condition, and

(d) then installing a piston in said cylinder while said sleeve is in its collapsed condition wherein said collapsed sleeve is maintained in its collapsed condition without any external forces acting on said sleeve to maintain its collapsed condition, and attaching said piston sealing end to said piston.

4,327,926

STEERING LINKAGE FOR VEHICLES

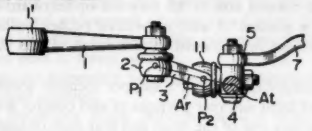
Akihiko Suganuma, Nagoya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 14, 1980, Ser. No. 130,436

Claims priority, application Japan, Apr. 2, 1979, 54-43764[U]

Int. Cl.³ B62D 7/16

U.S. Cl. 280—95 R **1 Claim**



1. A steering linkage comprising left and right side knucle arms, a tire rod, a Pitman arm, a relay rod, first and second ball joints which have first and second pivot centers respectively and pivotably connect one ends of said knucle arms respectively with opposite ends of said tie rod so that said knucle arms and said tie rod are pivoted relative to one another around said first and second pivot centers respectively, a third ball joint which has a third pivot center and pivotably connects one end of said Pitman arm with one end of said relay rod so that said Pitman arm and said relay rod are pivoted relative to one another around said third pivot center, and a fourth ball joint which has a fourth pivot center and pivotably connects the other end of said relay rod with an intermediate portion of said tie rod so that said relay rod and said tie rod are pivoted relative to one another around said fourth pivot center, said third pivot center of said third ball joint being positioned at a higher mounting level than said fourth pivot center of said fourth ball joint, characterized in that said fourth ball joint is mounted to said tie rod in such a manner that its said fourth pivot center is at a higher level than a first straight line which connects said first and second pivot centers of said first and second ball joints so that a second straight line which connects said third and fourth pivot centers of said third and fourth ball joints substantially intersects said first straight line.

4,327,927

SUSPENSION SYSTEM FOR AUTOMOTIVE VEHICLES

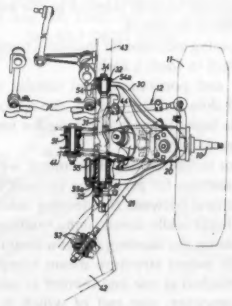
Toru Tanaka, Nagoya, and Yutaka Tomizu, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 19, 1980, Ser. No. 188,836

Claims priority, application Japan, Oct. 4, 1979, 54-137485[U]

Int. Cl.³ B60G 7/00

U.S. Cl. 280—96.1 **5 Claims**



1. In a suspension system for an automotive vehicle comprising a longitudinal shaft fixedly mounted on the vehicle body

structure and extending along the fore-and-aft axis of the vehicle, a control arm of the so-called "A" type supported at one end thereof from said longitudinal shaft by means of a pair of front and rear rubber bushes to be swung upwardly and downwardly, said control arm having a swingable end supporting thereon a road wheel, and a pair of retainer plates fixed to front and rear ends of said shaft and being arranged to receive a load acting on said control arm in the forward or rearward direction through a portion of said respective rubber bushes for restricting forward or rearward displacement of said control arm,

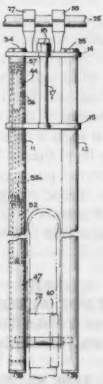
the improvement comprising a stopper member secured to any one of front and rear portions of said control arm and straddling any one of the front and rear ends of said shaft with a predetermined clearance, said stopper member being brought into engagement with the one end of said shaft when the load acting on said control arm is larger than a predetermined value.

4,327,928

MOTORCYCLE FORK STRUCTURE

William P. Chalmers, 571-½ 67th St., Inglewood, Calif. 90302

Filed Apr. 21, 1980, Ser. No. 141,787
Int. Cl.³ B62K *25/08*
U.S. Cl. 280—277 **3 Claims**



1. In a fork structure for the front end of a motorcycle, the improvement whereby the steering column structure of the motorcycle is connected to the motorcycle front wheel axle for limited longitudinal movement but constrained against any significant rotatable motion relative to the axle comprising

a pair of tubular members,

means for joining said tubular members together near the top ends thereof to form a fork,

the bottom end portions of said tubular members having elongated slots formed therein, the opposite end portions of the axle being fitted in said slots for longitudinal movement therealong,

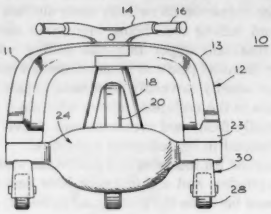
shock mount structure means mounted within each of said tubular members for permitting resilient longitudinal relative movement between the steering column structure and the wheel axle while constraining relative rotatable movement between the steering column structure and the axle, said shock mount structure means comprising a bushing fixedly attached at one end thereof to said wheel axle and a shock absorber, one end of which is attached to the other end of said bushing, the other end of said shock absorber being attached to the top end of the associated tubular member.

4,327,929

RIDE-ON TRICYCLE

John M. Melzian, Palos Verdes Estates, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 15, 1979, Ser. No. 12,527
Int. Cl.³ B62K *9/02, 19/16*
U.S. Cl. 280—282 **4 Claims**



1. In combination with a tricycle having a front fork rotatably supporting a pedal-driven wheel, a pair of handle bars connected to said fork and a pair of castered rear wheels, the improvement which comprises:

a U-shaped frame having a pair of open ends; first means rotatably connecting said fork to the center of said frame;

an elongated seat having a pair of ends, an indentation and a back, said indentation and said back being contoured to fit the anatomy of a child, each of said ends being provided with means for affixing one of said castered wheels;

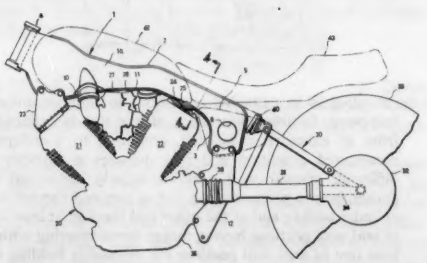
second means for affixing said ends of said seat to said open ends of said frame for connecting said seat thereto in depending relation therewith and with said castered wheels.

4,327,930

FRAME FOR TWO-WHEELED VEHICLE

Nobuyoshi Tominaga, Hamamatsu; Nobuyoshi Kurai, Iwata; Hajime Ueno, and Sadahide Suzuki, both of Shizuoka, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 11, 1980, Ser. No. 129,329
Claims priority, application Japan, Mar. 19, 1979, 54-32075
Int. Cl.³ B62K *19/30*
U.S. Cl. 280—284 **3 Claims**



1. In a two-wheeled vehicle including a main frame, a rear arm which is generally triangular in side elevation, said rear arm having a front end pivotally connected to said main frame, and a suspension mounted between the top of said rear arm and said main frame, said main frame comprising a pair of horizontally opposed metal plate members joined together at their forward portions and diverging from one another from a mid-portion to their rear portions, whereby to form a bifurcated portion; and a generally V-shaped inner plate bent aroung generally upright axes covering the insides of said metal plate members where they diverge, said metal plate members being

continuously welded to one another in said formed portion, and to said inner plate where they diverge from one another, whereby said inner plate reinforces said frame where the metal plate members diverge, and forms, therewithin a chamber in which said suspension is mounted.

4,327,931

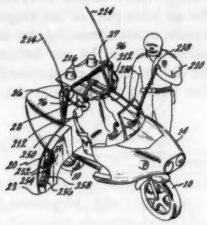
CRASH RESISTANT MOTORCYCLE WITH INTEGRAL DOOR AND STAND

Tadeus Winiecki, San Diego, Calif., assignor to Henry F. Winiecki and Martha M. Winiecki, both of Vancouver, Wash.

Division of Ser. No. 143,527, Apr. 24, 1980. This application Dec. 8, 1980, Ser. No. 214,345

Int. Cl.³ B62H *1/00*

U.S. Cl. 280—295 **6 Claims**



1. In a motorcycle having two wheels located in tandem, a frame interconnecting said wheels, a steering assembly for steering at least one wheel and a seat assembly for supporting at least one rider, the improvement comprising:

a cage of high strength interconnected tubing substantially surrounding the front, rear and sides of a rider in a seat in said seat assembly;

roll bar means on said cage extending above a rider in said seat;

a sheet material body substantially covering said cage; and

at least one door in said cage and body adjacent to a rider therein, hingedly mounted to be swung open to permit rider ingress and egress;

the lower outer edge of said door adapted to act as a sturdy side support when said door is opened to a position substantially perpendicular to said body and the motorcycle is at rest tilted slightly in the direction of the open door to bring said edge into contact with the ground.

4,327,932

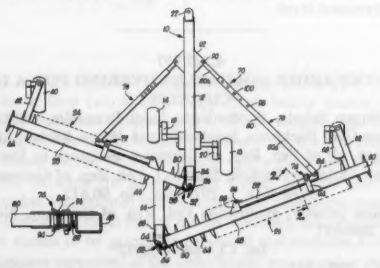
OVERLAPPED FOLDING BEAM IMPLEMENT

Carl M. Anderson, Claremore, Okla., assignor to Hesston Corporation, Hesston, Kans.

Filed Oct. 27, 1980, Ser. No. 203,116

Int. Cl.³ A01B *5/06, 73/00, 21/08*

U.S. Cl. 280—411 A **7 Claims**



1. In a tillage implement provided with a pair of elongated ground-working tool assemblies having a widespread, field-working position in which the assemblies project laterally outwardly in opposite directions with respect to the normal path of travel of the implement, the improvement comprising:

means mounting said assemblies with their laterally inboard ends mutually offset fore-and-aft and overlapping one another transversely with respect to said path of travel when the assemblies are in said widespread position,

said mounting means including vertical pivot means adapting the assemblies for horizontal swinging movement from said widespread position to a folded, transport position in which the assemblies extend generally parallel to said path of travel; and

means for releasably holding said assemblies in said widespread position,

said assemblies being provided with a main fore-and-aft extending frame having the said vertical pivot for one of said assemblies adjacent the rear end of said frame, the said vertical pivot for the other of said assemblies being carried by said one assembly for swinging movement with said one assembly during folding and unfolding thereof.

4,327,933

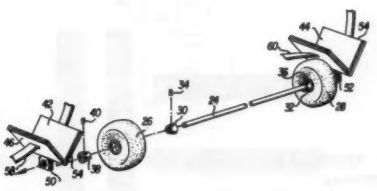
SAILBOAT CARRIER

William E. Tuggle, 212 65th St., Virginia Beach, Va. 23451

Filed Mar. 26, 1980, Ser. No. 134,242

Int. Cl.³ B60P *3/10*

U.S. Cl. 280—414.2 **12 Claims**



1. An improved carrier for twin hulled vessels, comprising:

an axle;

a pair of wheels mounted on said axle at spaced locations;

first and second cradle means for receiving a portion of the keel of a respective hull of such vessels; and

first and second bearing means, one affixed to the underside of each of said cradle means, said bearing means being slidable along said axle at locations spaced outboard of said wheels, whereby the spacing between said cradle means may be adjusted.

4,327,934

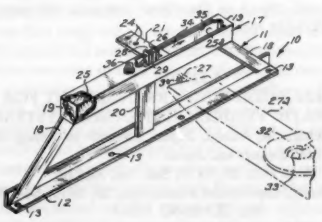
SLIDE, PULL AND PARK BAR HITCH STRUCTURE

Trulen F. Karnes, 351 N. H St., Tulare, Calif. 93274

Filed Aug. 18, 1980, Ser. No. 179,088

Int. Cl.³ B62D *53/08*

U.S. Cl. 280—423 R **3 Claims**



1. A fifth wheel mounting structure for connecting a trailer

and a pick-up truck, comprising, in combination, a pair of spaced-apart mounting frames secured to the bed of said pick-up truck, an elongated hollow member secured to each of said pair of frames, bar slidably received in each of said elongated hollow members, a mounting bracket secured to each of said pair of mounting frames, for securing the upper end of said pair of frames to the top of the rear wheel wells that extend upwards from said bed of said pick-up truck, a pin received in each of said bars and their respective said elongated hollow members, for rendering each of said bars stationary in each of said elongated hollow members when desired, and a clevis pin received in a pair of lugs secured to each of said bars, for securing the ends of a fifth wheel platform bar, which is on an axis transverse of the body of said pick-up truck.

4,327,935

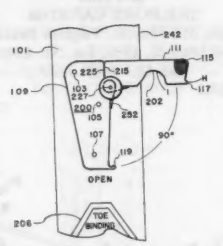
APPARATUS FOR ATTACHING TO A SNOW SKI

Lawrence K. Lake, 342 Avila Rd., San Mateo, Calif. 94402

Filed Apr. 19, 1979, Ser. No. 31,624

Int. Cl.³ A63C *7/00*

U.S. Cl. 280—604 **4 Claims**



1. Apparatus for attaching to a snow ski, said apparatus comprising:

a base means for attaching to said ski;

extendable means coupled to said base means for retractably extending beyond an edge of said ski;

said extendable means comprising engaging means for providing a surface to engage a ski pole and having a freedom of movement between first and second relative positions, said first relative position being the intended position for said extendable means to engage said ski pole, and said second relative position being the retracted position;

locking means coupled to said extendable means and said base means for retaining said extendable means in said second relative position and release means coupled to said locking means for releasing said extendable means from being contained in said second relative position in response to an operator manifestation indicating it is desired to release said extendable means and allow it to extend beyond the edge of said ski; and

rotating means for causing said extendable means to yield to pressure from an object from a first preselected direction and to allow said extendable means to move out of the path of said object as the object contacts and passes by said extendable means.

4,327,936

AIR DEHUMIDIFYING ARRANGEMENT FOR PNEUMATIC VEHICLE SUSPENSION SYSTEM

Tomoyoshi Sekiguchi, Atsugi, Japan, assignor to Atsugi Motor Parts Co. Ltd, Kanagawa, Japan

Filed Oct. 25, 1979, Ser. No. 88,128

Claims priority, application Japan, Jan. 25, 1979, 54-8395[U]

Int. Cl.³ B60G *17/04*

U.S. Cl. 280—711 **3 Claims**

1. A pneumatic self-levelling suspension system for a land vehicle, comprising:

(a) a power driven air compressor;

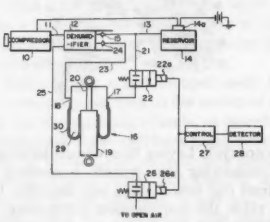
(b) an air reservoir operable to store therein compressed air;

(c) an air dehumidifier unit interconnecting the air compressor and air reservoir, said air dehumidifier unit including a regenerative desiccative chemical composition for dehumidifying compressed air received from the air compressor;

(d) a pneumatic variable-length suspension unit interconnecting a sprung mass part of the vehicle and an unsprung mass part of the vehicle for supporting the sprung mass part at a variable level in relation to a road surface, said suspension unit having air inlet and discharge ports communicating with a variable volume air chamber, the level of the sprung mass part being variable with the volume of the air chamber;

(e) first two position valve means interconnecting the air reservoir to the air inlet port of the suspension unit;

(f) passageway means interconnecting the air discharge port of the suspension unit to the air dehumidifier unit for discharging the dehumidified compressed air through the air dehumidifier unit to the ambient air, said discharged



compressed air tending to have lower humidity than the compressed air entering the air dehumidifier unit, thereby regenerating said regenerative desiccative chemical composition by removing and discharging moisture from the composition to the ambient air;

(g) second two position valve means provided in the passageway means; and

(h) electronic control means for opening the first two position valve means when the level of the sprung mass part is lower than a predetermined level in relation to the road surface, said electronic control means being operable to allow compressed air to enter the suspension unit and simultaneously close the second two position valve means to prevent discharge of compressed air from the suspension unit, thereby raising the level of the sprung mass part to a predetermined level in relation to the road surface, said electronic control means being further capable of closing the first two position valve means when the level of the sprung mass part is higher than the predetermined level and open the second two position valve means for lowering the level of the sprung mass part to said predetermined level.

4,327,937

DOWNWARDLY FOLDABLE COVERING FOR A GAS CUSHION

Hansjürgen Scholz, Waldenbuch; Luigi Brambilla, Böblingen; Hans-Gerd Backhaus, Ingolstadt, and Jürgen Körber, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,612

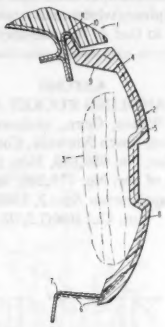
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848547

Int. Cl.³ B60R *21/08*

U.S. Cl. 280—732 **3 Claims**

1. Downwardly flippable cover for a gas bag arranged in the folded condition, wherein the cover is provided with a fabric reinforcement arranged in a hidden fashion and being in

contact with a lower mounting member, first and second films delimiting a padding layer on the front wall adjacent said gas bag and on the rear wall of the cover respectively, and wherein anchoring is afforded by a groove-and-tongue like cooperation of at least one section of a boundary edge with an adjoining part affixed to the car body, characterized in that the fabric



reinforcement is fashioned as mesh reinforcement means consisting of a high-strength synthetic resin fabric, which is bonded prior to the foam-encompassing step, with the lower mounting member by cementing, the lower mounting member being deformable during the step of flipping the cover into the open position.

4,327,938

VEHICLE FRAME WITH AN ENERGY-DISSIPATING FRAME PART

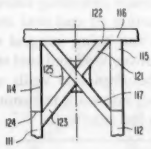
Heinrich Geissler, Stuttgart, and Josef Gratz, Fellbach, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 79,205

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841796

Int. Cl.³ B62D *21/00*

U.S. Cl. 280—784 **21 Claims**



1. A vehicle with an energy-dissipating frame part which includes at least two spaced longitudinal bearer means to be primarily deformed extending in a vehicle longitudinal direction, and a cross bearer means for connecting the two longitudinal bearer means, characterized in that a stabilizing means is disposed between the cross bearer means and the primarily deformable longitudinal bearer means, the stabilizing means is supported at the cross bearer means adjoining the longitudinal bearer means to be primarily deformed and includes a sheet-panel means supported at the cross bearer means and at least at the further frame longitudinal bearer means adjoining the longitudinal bearer means to be primarily deformed, and in that the sheet metal panel means is provided with aperture means.

4,327,939

CHEMICAL CARBONLESS COPY PAPER AND IMAGE RECEPTOR MEDIUM THEREFOR

Gerry H. Ehrhardt, West Des Moines, and Gene D. Carlson, Ankeny, both of Iowa, assignors to Frye Copysystems, Inc., Des Moines, Iowa

Filed Jun. 16, 1980, Ser. No. 159,587

Int. Cl.³ B41M *5/16, 5/122*

U.S. Cl. 282—27.5 **4 Claims**

1. A chemical type copy paper, comprising

planar sheet material having a non-transferable image producing receptor layer disposed on one surface thereof;

said image receptor layer comprising the solid residue of an applied alkaline biased liquid intermixture of an evaporable non-polar liquid hydrocarbon solvent vehicle, a resinous non-acidic binder, opacifier-filler material and colorless tri (p-phenylamino-phenyl) hydroxy methane dispersed therewithin and being selectively convertable into a color producing condition upon interreaction with electron accepting acidic chromogenic reagent material.

4,327,940

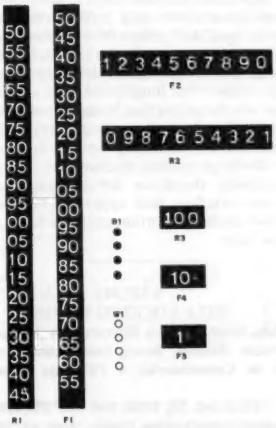
GASOLINE PUMP DISPLAY CONVERSION KIT

J. Don Sessions, Star Rte., Ketchum, Id. 83340

Continuation-in-part of Ser. No. 21,981, Mar. 19, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 233,025

Int. Cl.³ G01P *1/08*

U.S. Cl. 283—21 **7 Claims**



1. A conversion kit for converting the display wheels appearing through the face of the display of a conventional gasoline pump having at least a one-tenth cent wheel, a one cent wheel and a ten cent wheel and an adjustment mechanism associated with each of said wheels to increase the money value display comprising:

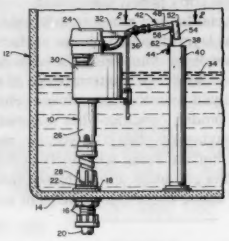
at least one first adhesive-backed linear strip (approximately one foot long) whose length is about equal to the circumference of the one cent wheel which conventionally reads from one cent to nine cents to display the cents portion of a particular sale, said strip being numbered from 0 to 95 with 100 equally spaced marks thereon, with numbers appearing in sequence at every fifth mark, said numbers oriented to be read when the strip is in a vertical position;

at least one second adhesive-backed linear strip (approximately six inches long) whose length is about equal to the circumference of the one-tenth cent adjustment wheel; said strip having numbers from 0 through 9 equally spaced thereon, said numbers oriented to be read when the strip is in a horizontal position.

4,327,941
REFILL HOSE MOUNTING MEMBER AND RETAINER FOR BALL COCKS

Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631

Filed Jun. 9, 1980, Ser. No. 157,499
Int. Cl.³ F16L *43/00*
U.S. Cl. 285—23 4 Claims

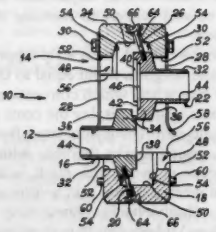


1. A refill hose mounting member for positioning an end of a flexible refill hose directing water from a water level control valve in a toilet flush tank generally downwardly into an upper end of a generally vertical overflow tube; the refill hose mounting member including a rigid elbow having a fluid passage therethrough, said elbow comprising a relatively straight refill hose connecting portion starting at a connecting end connectable to the flexible refill hose end which may be telescopically expanded thereover in fluid communication therewith, said refill hose connecting portion terminating in an end of a relatively straight overflow tube discharge portion which in turn terminates in an open discharge end, longitudinal axis of said discharge portion being angularly displaced at substantially a right angle from longitudinal axis of said connecting portion, said discharge portion being of reduced longitudinal length compared to said connecting portion; the refill hose mounting member also including flexible clip means secured to said elbow discharge portion discharge end projecting generally longitudinally therefrom for mounting said discharge portion on the overflow tube upper end to positively direct fluid from said discharge portion open discharge end fully into the overflow tube.

4,327,942
SELF-LOCKING UNION

Claude Abbes, Saint Etienne; Raymond De Villepoix, Donzere, and Christian Rouaud, Bourg Saint Andeol, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 29, 1980, Ser. No. 173,415
Claims priority, application France, Aug. 14, 1979, 79 20691
Int. Cl.³ F16L *23/00, 37/26*
U.S. Cl. 285—39 8 Claims



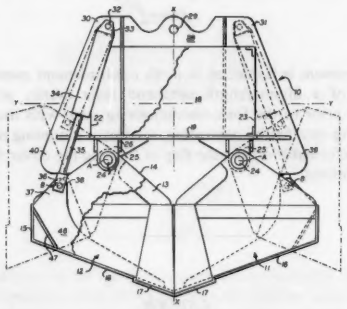
1. In a union or fitting of the type comprising two end pieces adapted to be fixed to two parts of circuit to be connected, two half-shells having internal truncated surfaces engaging complementary external truncated surfaces formed on the end pieces, to urge the latter into tight contact when the two half-shells are urged radially towards each other,

automatic locking means are disposed on the sides of the two half-shells, each of the half-shells being made fast with one of the end pieces by connecting means allowing a radial displacement of the half-shell with respect to the corresponding end piece, whilst maintaining the axis of the end piece parallel to that of the half-shell.

4,327,943
MATERIAL HANDLING BUCKET ARRANGEMENT

Joseph F. Longo, Wilton, Conn., assignor to Condor International Corporation, South Norwalk, Conn.

Continuation of Ser. No. 959,580, Nov. 13, 1978, abandoned, which is a division of Ser. No. 775,208, Mar. 7, 1977, Pat. No. 4,143,900. This application Apr. 3, 1980, Ser. No. 136,765
Int. Cl.³ B66C *3/02*
U.S. Cl. 294—70 2 Claims



1. A bowl for a material handling bucket pivotally mounted to a frame, said bowl comprising polygonal shaped side walls, a rear wall and a bottom wall, said rear and bottom walls intersecting at an angle substantially perpendicular to each other, a push plate integral with the rear wall and extending in a plane between and parallel to the side walls, said side walls of the bowl extending above the upper edge of said rear wall and being pivotally journalled to said frame, ram means for moving said bowl connected at one end to the upper portion of said push plate remote from said intersection, and means for forming a unitary tubular brace extending cater-corner to the interior surface of intersection of said rear and bottom walls between said side walls and being integral with said rear wall, said push plate, said bottom wall and said side walls preventing torsional movement between said walls and to interconnect said push plate with said side walls transmitting the force of the ram means directly to the side walls.

4,327,944
TONGS DESIGNED TO LIFT AND HANDLE METAL SHEETS AND SIMILAR MATERIALS

Charles Langloy, 24 Rue Claude Farrere, 69003 Lyon, Rhone, France

Filed Dec. 7, 1979, Ser. No. 101,558
Claims priority, application France, Dec. 8, 1978, 78 35291; Mar. 30, 1979, 79 08585
Int. Cl.³ B66C *1/48*
U.S. Cl. 294—101 18 Claims

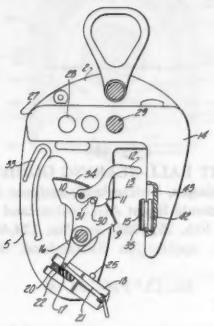
1. A clamping device for handling and lifting metal sheets, said device comprising:

a body member having a first portion and a second portion mounted adjacent to said first portion, said first portion having a first flange, said second portion having a second flange opposite but spaced away from said first flange;

said first and second flanges defining an opening therebetween for receiving metal sheets therein;

a cam member rotatably mounted to said first portion, said cam member having an adjustable grip portion and a leg portion opposite said adjustable grip portion, said cam member further being attached to said first portion adjacent to said first flange so as to permit said adjustable grip portion to rotate in said opening from a first open position to a second closed position;

a lug mounted to said adjustable grip portion;



a lever arm pivotally mounted to said first portion, said lever arm having a notched portion, said notched portion further engaging said lug to lock said adjustable grip portion of said cam member in said first open position when said lever arm is rotated to extend into said opening toward said second flange; and

means for disengaging said lug from said notched portion in said lever arm by rotating said lever arm away from said lug such that said adjustable grip portion on said cam member pivotally rotates from said first open position to said second closed position, said disengaging means mounted on said lever arm.

4,327,945

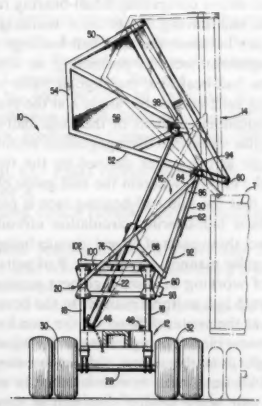
HIGH LIFT, SIDE DUMPING VEHICLE

Larry G. Fowler, Belle Glade, Fla., assignor to Inter-American Transport Equipment Company, Miami, Fla.

Filed Jul. 31, 1980, Ser. No. 173,886

Int. Cl.³ B60P *1/34*

U.S. Cl. 298—11 **7 Claims**



1. A transporter for articles comprising:

container means for receiving articles to be transported;

chassis means for supporting said container means;

frame means for supporting said container means on said chassis means, said frame means being vertically translatable a between lowered and a raised position;

connection means for pivotally interconnecting said frame means with an upper portion of said container means;

guide means extending upwardly from said chassis means for guiding vertical translation of said frame means, said guide means comprising pairs of adjacent posts at fore and aft ends of said chassis means extending vertically upward from said chassis means, bars interconnecting upper ends of adjacent posts, and blocking means carried by at least one of said bars for stopping upward movement of said frame means after said frame means reaches the raised position thereof; and

movement means interconnected between said container means and said chassis means for exerting a force on said container means such that the interconnected frame means and container means are translated as a unit from the lowered to the raised position of said frame means and such that said container means is pivoted with respect to said frame means after said frame means has reached the raised position thereof to thereby dump the contents of said container means.

4,327,946

APPARATUS FOR CONTROLLING THE POSITION OF A MINERAL MINING MACHINE

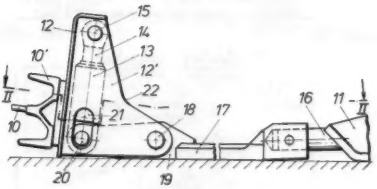
Rüdiger Kirchbrücher, Dortmund-Brackel, and Kunibert Becker, Werl, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,209

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 2944885

Int. Cl.³ E21C *35/08*

U.S. Cl. 299—33 **17 Claims**



1. In an apparatus for controlling the position of a mineral mining machine movable along guide means; said apparatus comprising connection means formed on the guide means, piston and cylinder units pivotably connected to said connection means, and cantilevered beams pivotably connected to said connection means and pivotably and displaceably connected with roof supports, the improvement comprising the piston and cylinder units are pivotably connected to the beams at pivot locations closer to the guide means than the pivot locations between the connection means and the beams and below the pivot locations between the units and the connection means.

4,327,947

KEEPER SPRING FOR CONNECTING MINING TOOL TO WORK TOOL HOLDER

Arnold B. Bower, Jr., Bristol, Va., assignor to General Electric Company, Columbus, Ohio

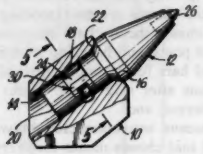
Filed Jun. 17, 1980, Ser. No. 160,234

Int. Cl.³ E21C *35/18*

U.S. Cl. 299—86 **8 Claims**

1. A keeper spring for mounting a rotatable mining tool in

the bore of a support block comprising a generally cylindrical member made of a metallic spring material, said cylindrical member being split along the axial length thereof to define a first spring portion that is radially expansible and contractible, and said cylindrical member including a plurality of second spring portions disposed on the circumference thereof, each second spring portion being an elongted arcuate leaf spring protuberance having each end joined to said cylindrical member and having the opposite side edges thereof being defined by two parallel slits cut into said cylindrical member, each said second spring portion projecting radially outward of, and axially aligned with, said cylindrical member, the portions of said cylindrical member between said second spring portions being continuous cylindrical arcs having radii equal to the radii of the portions of said cylindrical member on either end of said protuberances.

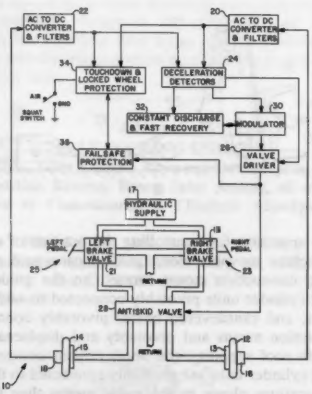


4,327,948

ANTISKID BRAKE CONTROL FOR AIRCRAFT

Arnold A. Beck, Clinton, and Edgar J. Ruof, Akron, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Aug. 14, 1978, Ser. No. 933,348
Int. Cl.³ B60T *8/02*
U.S. Cl. 303—96 **35 Claims**



1. An antiskid control circuit for aircraft having an antiskid valve for controlling the braking of the wheels thereof by regulating the application of brake pressure, and a transducer for each wheel producing wheel speed signals indicative of the instantaneous rotational speed of the associated wheel, comprising:

deceleration detection means connected to and receiving the wheel speed signals from the transducers for presenting an output signal when the rate of deceleration of a wheel exceeds a predetermined threshold;

a valve driver interconnected between said deceleration detection means and the antiskid valve and responsive to said output signals to release brake pressure;

a modulator interconnected between said deceleration detection means and said valve driver, responsive to said output signal to further release brake pressure and then increase brake pressure at a predetermined rate following said release; and

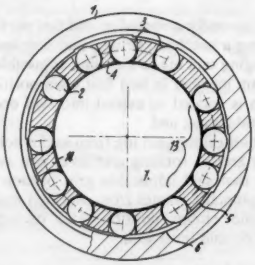
wherein said valve driver includes gain control circuitry responsive to said deceleration detection means and said modulator to modify the effect of the modulator and deceleration detection means on the antiskid valve as a function of the amplitude and frequency of occurrence of said output signal.

4,327,949

AXIAL-ROTARY BALL-BEARING GUIDE ELEMENT

Denis Borel, Matzingen, Switzerland, assignor to SRO Kugellagerwerke J. Schmid-Roost AG, Switzerland

Filed Feb. 25, 1980, Ser. No. 124,460
Claims priority, application Switzerland, Feb. 26, 1979, 1853/79
Int. Cl.³ F16C *31/06*
U.S. Cl. 308—6 C **15 Claims**



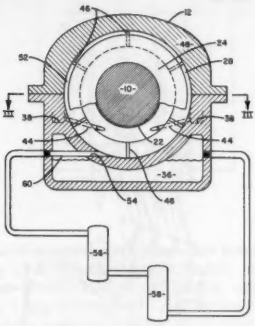
1. A guide element involving ball-bearing contact on a shaft for unrestricted linear movement and/or rotary movement, which comprises an external sleeve that axially aligns an internal tubular housing that can rotate freely and comprises closed ball-bearing circulation circuits formed by two longidudinal sections connected to one another by curved sections at their ends, the said sleeve comprising a ball-bearing race positioning ball-bearings and having in its bore working sections that ensure contact between the said ball-bearings and said shaft and disengagement sections permitting an alternating recycling of these ball-bearings, the angular value of the working sections being smaller than the angle λ at the center defined by the two longitudinal sections of the same ball-bearing circuit and the angular value of a disengagement section being larger than the angle at the center defined by the two longitudinal sections of the circuit, wherein the said guide element is characterized in that the said ball-bearing race is provided with at least six closed ball-bearing circulation circuits arranged in groups of two, these pairs of closed circuits being distributed in a regular angular manner, the number P of pairs being half the number H of working or disengagement sections, themselves also distributed in a uniform manner in the bore of the sleeve, the angle α at the center defined by the two longitudinal sections of the same circuit being substantially equal to $(360°/4P)$, and the angle β at the center defined by the two adjacent longitudinal sections next to one another in each individual circuit of a pair being smaller than and at most equal to the value of the angle γ at the center defined by a working section of the sleeves.

4,327,950

BEARING AND LUBRICATION SYSTEM

Charles C. Czuszak, Greensburg, Pa., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Division of Ser. No. 24,831, Mar. 29, 1979, Pat. No. 4,243,275.
This application Jul. 2, 1980, Ser. No. 165,321
Int. Cl.³ B61F *17/16*
U.S. Cl. 308—128 3 Claims



1. A lubrication method for use with a rotary machine having a lubricant supply, a rotatable shaft, and a bearing assembly defining an annular cavity and including a journal bearing assembly rotatably supporting the shaft, and a thrust bearing assembly limiting axial movement of the shaft, wherein the thrust bearing assembly includes a thrust collar secured to the shaft and radially extending outward therefrom into the annular cavity, the lubrication method comprising the steps of:

raising lubricant from the supply thereof to lubricate surfaces of the journal bearing assembly, wherein a portion of the raised lubricant is thrown radially outward;

collecting a quantity of said portion of lubricant prior to said quantity of lubricant returning to the lubricant supply;

conducting the collected quantity of lubricant radially inward into the annular cavity;

conducting lubricant radially outward along the thrust collar, wherein rotation of the thrust collar throws lubricant outward therefrom;

collecting lubricant thrown from the thrust collar in the annular cavity; and

conducting lubricant from the annular cavity, to a remote location, and back to the lubricant supply.

4,327,951

CLUTCH RELEASE BEARING ASSEMBLY

David R. Arrowsmith, Leamington Spa, and David Parsons, Kenilworth, both of England, assignors to Automotive Products Limited, Leamington Spa, England

Division of Ser. No. 952,779, Oct. 19, 1978, Pat. No. 4,229,058.
This application Jun. 4, 1980, Ser. No. 156,276
Claims priority, application United Kingdom, Oct. 22, 1977, 44027/77
Int. Cl.³ F16D *13/60;* F16C *19/00*
U.S. Cl. 308—184 A 2 Claims

1. A self aligning clutch release bearing assembly comprising:

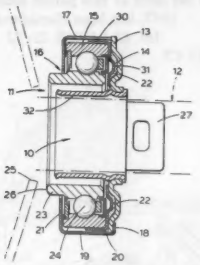
a rolling element bearing having a rotary race and a non-rotary race, said non-rotary race including a part having an axially directed face;

support means on which the bearing is mounted and which permits the non-rotary face to move transversely to the rotary axis of the release bearing assembly so that in use the bearing can align with the rotary axis of the clutch;

an adhesive viscous material disposed in a space between the support means and said axially directed face so as to damp vibrations and permit transverse self-centering movement and being means whereby the rolling element bearing is held in axially assembly to the support means, with respective parts of the support means and the axially directed face in direct axial opposition for the transmission of clutch release load from the support means to the bearing;

an annular retainer means acting to prevent axial separation of said axially directed face and said support means;

one of said support means and said axially directed face has



at least one baffle thereon that projects into the space filled by the adhesive to provide for enhancing the damping effect; and

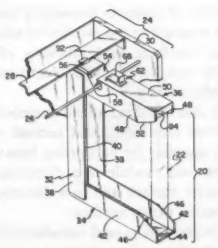
said non-rotary race held in an annular carrier plate having the axially directed face thereon, said baffle being formed as an annular rib on the carrier plate and said rib cooperates loosely with an annular groove on said support means.

4,327,952

DOCUMENT STORAGE FILE

Bernard T. Cournoyer, Holden; Robert G. Bogren, Worcester, and David M. Wright, Shrewsbury, all of Mass., assignors to Wright Line Inc., Worcester, Mass.

Filed Apr. 17, 1980, Ser. No. 140,968
Int. Cl.³ A47B *63/00;* B65D *85/67*
U.S. Cl. 312—184 13 Claims



1. A storage file of open box-like form for storing books, loose-leaf binders, bound documents, cassettes, recording discs and the like, said storage file comprising in combination:

a bottom of substantially planar form;

a back of substantially planar form connected conterminously with and normal to said bottom;

a top connected conterminously with and normal to said back distal from said bottom;

a pair of sides of substantially planar from disposed parallel to one another and normal to said bottom and to said back, said sides being connected so as to bridge between at least two of said bottom, said back and said top; and

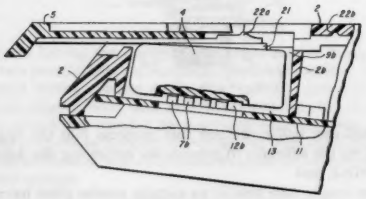
a hook means on said top for attaching said storage file to a hanger bar of a suspension filing unit, said hook means including a hook and lock means for preventing inadvertent disengagement of said hook from said hanger bar.

4,327,953

INTERCHANGEABLE MODULE FOR INTEGRATED CIRCUITS

Gary A. Slagel, Richardson, and Peter L. Bonfield, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 803,507, Jun. 6, 1977, Pat. No. 4,216,522. This application Aug. 2, 1979, Ser. No. 103,830
The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.
Int. Cl.³ H01R 23/72
U.S. Cl. 339—17 CF 2 Claims



1. An interchangeable modular system for an electronic calculator or the like, comprising:

(a) a module including:

(i) an electronic device:

(ii) at least one body member forming an essentially polyhedral housing for said module and providing a chamber therein for containing said electronic device, said body having first and second opposite exterior major surfaces;

(iii) a plurality of contacts essentially located in a single plane and exposed to the exterior of said module via said first major surface, said plurality of contacts being electrically coupled to said electronic device within said chamber; and

(iv) at least one inclined plane member extending outwardly from and along said second major surface of said body member for permitting biasing pressure to be exerted on said module in a direction parallel to said second major surface and in a direction perpendicular to said second major surface;

(b) a receptacle located in said calculator for receiving said module; said receptacle including a second plurality of contacts adapted to electrically conductively engage the plurality of contacts located in said module when said module is installed in said receptacle;

(c) a receptacle cover for sealing said receptacle with said module located therein, said cover being engageable with said inclined plane member to ensure firm engagement of the contacts in said module with the contacts in said receptacle by exerting biasing pressure on said module in a direction parallel to said second major surface and in a direction perpendicular to said second major surface when said module is inserted in said receptacle and the receptacle cover is closed by pushing the cover along said inclined plane member in a direction parallel to a plane defined by the mouth of the receptacle; and

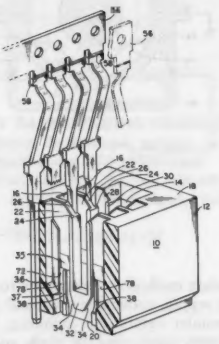
(d) means adjacent said receptacle mouth for guiding said receptacle cover for movement in said plane defined by the mouth of the receptacle.

4,327,954

PREASSEMBLED CONNECTING AND TERMINATING APPARATUS FOR PRINTED WIRING BOARDS

Lionel D. Aldridge, Seminole, and Robert Trank, Pompano Beach, both of Fla., assignors to Burroughs Corporation, Orlando, Fla.

Filed Jan. 28, 1980, Ser. No. 115,627
Int. Cl.³ H01R 21/28
U.S. Cl. 339—64 M 3 Claims



1. A connector terminator device for edge contact printed circuit boards wherein the boards are adapted to carry printed wiring contact pads for mating engagement with external connector contacts comprising,

an insulated housing for mounting electrical circuit contacts therein and for permitting insertion and removal of said electrical contacts therefrom in two opposite directions without damage to either the housing or the contacts,

said housing including an outer box-like shell having side walls and being open at the top and bottom to permit said housing to receive said contacts through the top for inter engagement with the contact pads of said printed circuit board while enabling either said housing to be removed from said contacts and said printed circuit board or said contacts to be removed separately or en masse through the top or bottom of said housing, said housing further comprises a plurality of confronting pairs of substantially rectangular elongated channels separated by a longitudinal opening for receiving a printed circuit board carrying a plurality of electrical contact circuit pads thereon and wherein each adjacent pair of channels includes an inwardly tapered portion leading directly to a constricted area for guiding and constraining a portion of each contact which may be inserted in the said channel thereby effectively preventing accidental dislodgment or disengagement of the contact and wherein said constricted area opens abruptly outwardly permitting limited freedom of movement of said contact;

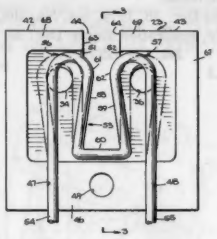
means integral with said housing permitting frictional engagement of said contacts with said housing while tolerating misalignment between said contacts and the receiving openings in an insulative substrate, and

an insulative substrate including contact receiving openings into which the contacts within said housing are adapted to be electrically and mechanically connected and mounted and to which said housing is disposed in contact engagement.

4,327,955
REDUCED INSERTION FORCE CONNECTOR

Jerry B. Minter, Components Corporation, Denville, N.J. 07834

Filed Sep. 24, 1979, Ser. No. 78,326
Int. Cl.³ H01R *13/62, 23/70*
U.S. Cl. 339—74 R 16 Claims



1. A reduced insertion force connector comprising:

a plurality of U-shaped insulator wafers, each comprising first and second laterally separated, opposite portions defining a gap therebetween and having first and second substantially coplanar surfaces, respectively, a third portion joining the first and second portions, and an insulating spacing portion raised above the first surface;

a plurality of elongated, resilient M-shaped conductor means of round cross section and comprising first and second U-shaped loop portions parallel, respectively, to the first and second substantially coplanar surfaces, each of the loop portions having an end extending beyond the third portion and clear of the insulator wafer, the M-shaped conductor comprising a central bight between the loop portions, parts of the loop portions defining the central bight being located on the U-shaped insulator to allow a conductive member inserted into the gap between the laterally separated portions to make contact with at least one side of the bight and to be received between the two parts defining the bight;

means to hold a first portion of at least one of the conductor means relatively stationary adjacent the first portion of each of the wafers, respectively, while permitting a second portion of the same conductor means adjacent the loop portion thereof to move parallel to the first surface of the respective one of the wafers between a first position extending at least part of the way across the gap toward the opposite portion of the same wafer, in which position the second portion of the same conductor means can exert a substantial pressure on a conductive member of predetermined thickness inserted in the gap, and a second poistion farther removed from the opposite portion of the same wafer; and

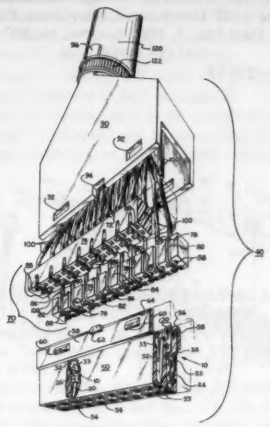
movable means to engage the conductor means in one of the positions and to press the second portion of the conductor means into the other of the positions, each of the insulator wafers comprising guide means to hold the movable means then the movable means is in engagement with the conductor.

4,327,956
LOW INSERTION FORCE DUAL BEAM PIN TERMINAL AND CONNECTOR

Fred C. Sitzler, Dillsburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 931,521, Aug. 7, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,296
Int. Cl.³ H01R *4/24, 13/58*
U.S. Cl. 339—107 6 Claims

1. An elongate electrical terminal stamped from flat metal sheet, said terminal being formed to have a contact at each end, one of said contacts comprising a pair of longitudinally disposed dual beams for receiving a male pin contact with two laterally opposed stand-off tabs positioned, one on each edge of each of the two beams, one tab on one beam butting against one tab on the opposing beam, said stand-off tabs being formed by

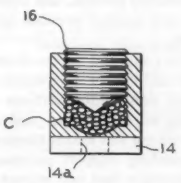


bending the tabs inwardly 90° from the flat metal sheet after the terminal has been stamped, said formed tabs holding said beams in a spring-loaded, preloaded position with respect to each other in the fully formed terminal.

4,327,957
ELECTRICAL TERMINAL LUG

James J. Cooper, Jr.; William C. Reinhardt, and Elmer H. Hornung, all of St. Louis, Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,341
Int. Cl.³ H01R *4/36*
U.S. Cl. 339—272 R 3 Claims



1. An electrical terminal lug connector for use with a given maximum diameter stranded cable conductor having a generally round cross section and comprising:

a terminal lug body having a conductor receiving bore hole extending therethrough from end to end thereof;

a threaded bore extending from an upper surface of said body which is parallel to the axis of said conductor bore hole, through the axis of said conductor bore hole and terminating into the lower portion of said conductor bore hole;

a setscrew threadedly received in said threaded bore for engagement with said stranded conductor; and,

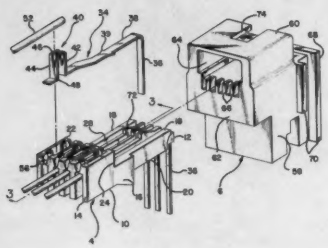
wherein said lower portion of said conductor bore hole includes an undercut relief portion spaced apart from the round bottom portion of said bore hole and extending upwardly adjacent to and generally coaxial with said threaded bore for receiving deformed portions of said cable which extend radially outwardly of the normal circumference of said cable conductor.

4,327,958

CONNECTOR JACK

Donald W. K. Hughes, Mechanicsburg; Ronald W. Myers, Landisburg, and Charles H. Weidler, Lancaster, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 5, 1980, Ser. No. 146,807
Int. Cl.[3] H01R 4/24
U.S. Cl. 339—276 SF 8 Claims



1. A continuous composite strip of electrical connector receptacle sub-assemblies of the type intended for assembly to an electrical connector housing to produce an electrical connector assembly, said strip comprising:

continuous metallic carrier strip means extending for the full length of said strip,

each of said sub-assemblies comprising a group of side-by-side stamped conductors and an insulating support member,

said conductors of each group extending transversely of, and being integral with, said carrier strip means, each conductor comprising a contact portion, an intermediate portion and a wire connecting portion, said intermediate portions being between said contact portions and said wire connecting portions,

said contact portions and said intermediate portions of said conductors and said carrier strip means lying in a single plane, said wire connecting portions having platelike means extending normally from said single plane and having wire-receiving slot means therein,

each of said insulating support members comprising a molded body having a first and second end, said second end being adjacent to said carrier strip means and said first end being spaced from said carrier strip means, said support member having first and second major surface portions which extend between said ends and which are substantially parallel to said single plane,

said intermediate portions and said wire connecting portions of said conductors of each group being contained in the associated insulating support member in conductor receiving channels and cavities respectively, with said contact portions extending from said first end, said channels extending inwardly from one of said major surface portions, each of said platelike means being disposed in one of said cavities, whereby,

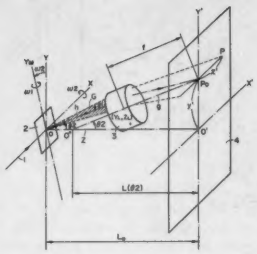
upon insertion of wires into said slot means of said wire connecting portions of one of said groups of conductors, severing of the conductors of said group from said carrier strip means, and reversely bending said contact portions of said conductors through an obtuse angle towards said associated insulating support, said sub-assembly can then be assembled to a connector housing to produce a wired electrical connector.

4,327,959

TWO-DIMENSIONAL SCANNING DEVICE WITH DEFLECTION SCANNING PLANE AND OPTIC AXIS MAINTAINED PARALLEL

Kazuo Minoura, Yokohama; Takehiko Kiyohara, Zama, and Jun Saito, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 108,059
Claims priority, application Japan, Dec. 30, 1978, 53/164669
Int. Cl.[3] G02B 27/17
U.S. Cl. 350—6.3 7 Claims



1. A two-dimensional scanning device comprising:

deflecting means having first and second orthogonal rotation axes for two-dimensionally deflecting a beam incident thereon in parallelism to said second rotation axis;

light source means for supplying a parallel beam to said deflecting means;

a scanned surface subjected to two-dimensional scanning by the beam deflected by said deflecting means;

an image forming optical system provided between said scanned surface and said deflecting means; and

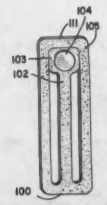
mechanical means for always maintaining parallel to each other a deflection scanning plane formed with lapse of time by the beam deflected around said first rotation axis of said deflecting means and the optic axis of said image forming optical system.

4,327,960

LENS CAP HOLDER

Arthur Gould, 1690 W. 6 St., Reno, Nev. 89503

Continuation-in-part of Ser. No. 49,329, Jun. 18, 1979, abandoned. This application Sep. 19, 1980, Ser. No. 189,390
Int. Cl.[3] G02B 23/16; G03B 11/04; B65D 55/16
U.S. Cl. 350—65 4 Claims



1. A lens cap holder comprising an elongated, generally rectangular elastic member having a longitudinal axis extending between opposite ends of said member, said member also having a generally U-shaped cut therein extending along said axis and defining a relatively narrow, outer lens-engaging portion and an inner strap portion in said member, one end of said inner strap portion being integral with one of the holder member ends and the other end of said strap portion terminat-

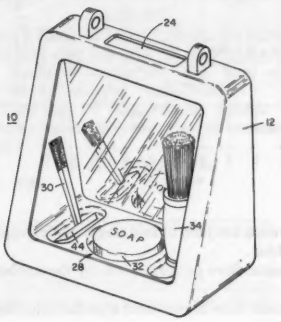
ing in a free end disposed adjacent the other end of said holder member, the free end of said strap portion being adapted to receive an adhesive patch for attachment to a lens cap.

4,327,961

NON-STEAMING MIRROR

Nicholas S. Kladitis, 1636 Ridge Ave., Sharpsville, Pa. 16150

Filed Jul. 2, 1980, Ser. No. 164,495
Int. Cl.[3] A45D *27/22*; G02B *7/18*
U.S. Cl. 350—66 **8 Claims**



1. A mirror for use in a steamy or humid environment comprising:

a housing constructed from a material having low thermal conductivity;

a reflective member secured to said housing, said reflective member being constructed of a material having low thermal conductivity;

said housing and a surface of said reflective member defining a compartment for storing a predetermined quantity of a hot liquid behind said surface and maintaining a portion of the liquid in contact with said surface of said reflective member to conduct heat from said liquid to said reflective member;

said mirror defining an opening that communicates with said compartment through which said compartment can be filled with hot liquid prior to each use of said mirror; and

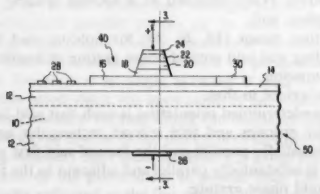
said reflective member receiving heat by conduction from static hot liquid disposed within said compartment through said surface and transferring said heat to the reflective surface of said reflective member for preventing said reflective surface from becoming fogged when said mirror is used in a steamy or humid environment.

4,327,962

LASER/AMPLIFIER/DETECTOR DIODE

Charles M. Redman, 4500 Panorama Dr., Las Cruces, N. Mex. 88001

Filed Feb. 13, 1980, Ser. No. 121,182
Int. Cl.[3] G02B *5/174*
U.S. Cl. 350—96.15 **7 Claims**



1. An apparatus, comprising:

a single crystal optical fiber waveguide;

a double heterojunction diode having an active P-N region fabricated on said waveguide;

first means for causing said diode to function as a source of laser radiation and for causing said laser radiation to be coupled into said waveguide in opposite directions having a different frequency in each direction;

second means for causing said diode to function as an amplifier of said radiation in said waveguide;

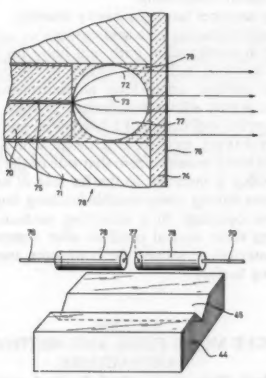
third means for causing said diode to deflect said radiation out of said waveguide and for detecting the heterodyne difference frequency of said deflected radiation.

4,327,963

COUPLING ELEMENT WITH A LENS FOR AN OPTICAL TRANSMISSION SYSTEM

Giok D. Khoe; Joannes P. M. Gieles, and Gerard Kuyt, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 945,725, Sep. 25, 1978, abandoned which is a continuation of Ser. No. 795,728, May 11, 1977, abandoned. This application Nov. 19, 1979, Ser. No. 95,913
Claims priority, application Netherlands, May 31, 1976, 7605819
Int. Cl.[3] G02B *7/26*
U.S. Cl. 350—96.18 **3 Claims**



1. An optical fiber coupler, comprising:

two or more monomode optical fibers, each of said fibers being substantially circular cylindrical with the same diameter and having a core, a cladding and an end face;

a coupling element for each fiber comprising:

a holder having a capillary duct therethrough, said capillary duct having at least a portion, in which the end face of the fiber is inserted, which is substantially circular cylindrical with a substantially constant diameter which is slightly larger than the diameter of the fiber; and

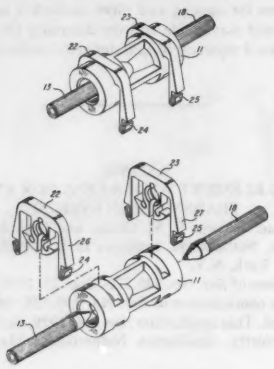
a ball lens, inserted in the substantially constant diameter portion of the capillary duct at one end thereof adjacent the end face of the fiber and arranged so that the end face of the fiber core is substantially at the focus of the lens, said lens having a diameter substantially equal to the diameter of the fiber and having a refractive index which decreases from the center outwards as a function of the radius; and

means for aligning the coupling elements on a common optical axis.

4,327,964
SNAP-ACTION FIBER OPTIC CONNECTOR

Barry F. Haesly; Richard D. Harris, Richardson; Eugene G. Dierschke, Dallas, and Michael R. Hailey, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1979, Ser. No. 105,814
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **4 Claims**



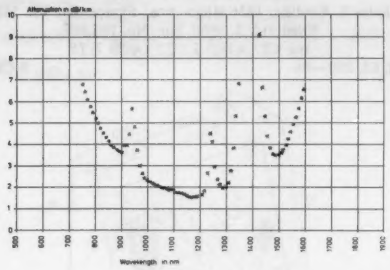
1. A connector comprising:
(a) a body member having a cavity therein;
(b) a ferrule extending into said cavity;
(c) means in combination with said body for retaining said ferrule in place, and for mounting of the connector on a selected surface, comprising an interchangeable elastic member which allows said ferrule to snap out of the assembly upon application of a substantial pulling force, said member having molded extensions which are directed past said body member from that side of the body wherein the member is inserted, to the far side of said body, said extensions having compressable latching fingers for insertion into openings in a mounting surface, said fingers resuming their normal position after compression while being inserted, to secure the connector assembly to said mounting surface.

4,327,965
SINGLE MODE FIBRE AND METHOD OF MANUFACTURE

Philip W. Black, Bishop's Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,391
Claims priority, application United Kingdom, Oct. 29, 1979, 37401/79
Int. Cl.³ C03B 37/075; G02B 5/172
U.S. Cl. 350—96.33 **4 Claims**

1. A method of making an optical fibre preform wherein an optical absorption glass layer of doped silica that includes oxides of boron and phosphorus and has an index greater than that of silica is deposited by vapour reaction upon the bore of a silica substrate tube, wherein a transparent optical cladding glass layer of doped silica that includes germania and has a refractive index less than, equal to, or not substantially greater than that of the absorption layer is deposited by vapour reaction upon the absorption layer, wherein a transparent optical core glass layer of doped silica that includes germania and has a refractive index greater than that of the cladding layer is deposited by vapour reaction upon the cladding layer, wherein each of said vapour reactions is a reaction from which hydrogen and its compounds are excluded, and wherein the bore of the thus coated tube is collapsed to form a solid cross-section optical fibre preform, and the relative amounts compositions of the core and cladding glasses deposited are such that single mode optical fibre is capable of being drawn from the preform that is capable of single mode operation at selected wavelengths in the free-space wavelength range of 1.5 to 1.7 microns in which substantially all of the optical power associated



with the evanescent field of said single mode propagates in said cladding glass.

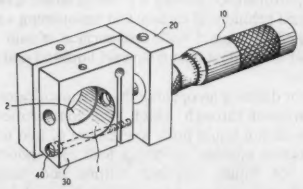
3. An optical fibre preform made by the method claimed in claim **1**.

4. An optical fibre drawn from a preform as claimed in claim **3**.

4,327,966
VARIABLE ATTENUATOR FOR LASER RADIATION

David M. Bloom, Menlo Park, Calif., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 25, 1980, Ser. No. 124,359
Int. Cl.³ G02B 5/18; G21K 1/04
U.S. Cl. 350—162 R **7 Claims**



1. A variable attenuator for laser or collimated radiation which comprises:
a first phase grating (**1**) having first rectangular grooves disposed on a substrate face in a parallel pattern of straight lines, said first rectangular grooves having a first depth, a first width and said first rectangular grooves being disposed at a first spacing from one another;
a second phase grating (**2**) having second rectangular grooves disposed on a substrate face in a parallel pattern of straight lines, said second rectangular grooves having a second depth, a second width and said second rectangular grooves being disposed at a second spacing from one another; and
mounting means (**10, 20, 30**) for holding said first phase grating and said second phase grating at a predetermined orientation;
characterized in that:
said predetermined orientation is such that said first rectangular grooves and said second rectangular grooves are substantially parallel and the face of said first phase grating is substantially parallel and adjacent to the face of said second phase grating;
said mounting means slidably holds said first phase grating and said second phase grating for translating said gratings

with respect to each other while maintaining said predetermined orientation; and

said first depth and said second depth are equal to $L=(\lambda\phi/2\pi\Delta n)$ where λ is the wavelength of said laser or collimated radiation, Δn is the difference in the index of refraction between the material of said first and second phase gratings and the medium surrounding said gratings, and ϕ is in the range of $\pi/2<\phi<3\pi/2$ plus any integer multiple of 2π.

4,327,967
HEAT-REFLECTING PANEL HAVING NEUTRAL-COLOR OUTER APPEARANCE

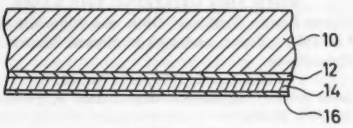
Rolf Groth, Bochum-Wattenscheid, Fed. Rep. of Germany, assignor to BFG Glassgroup, Paris, France

Filed Jun. 11, 1980, Ser. No. 158,481

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924833

Int. Cl.³ G02B *17/00*

U.S. Cl. 350—258 **7 Claims**



1. In a heat reflecting panel having a neutral color external appearance and having a transparent film support, an interference film of dielectric material with a refractive index >2 placed upon said transparent film support and a heat reflecting gold coating placed on the side of the interference film remote from said transparent film support, the improvement wherein said gold coating has a thickness between 70 and 105 A and a neutralization film is provided on the side of said gold film remote from the interference film, said neutralization film having a thickness of between about 8 and 60 A and comprising a material selected from the group consisting of chromium, iron, nickel, titanium, alloys of the aforementioned metals, and an alloy of the metals chromium, aluminum and iron.

7. The heat reflecting panel according to claim 1 in combination with a multiple panel arrangement for installation in a building, said multiple panel arrangement having an inside panel and an outside panel relative to the interior and the exterior of the building, wherein said heat reflecting panel is the outside panel of said multiple panel arrangement.

4,327,968
PRISM PLATES FOR COMPACT OPTICAL VIEWERS

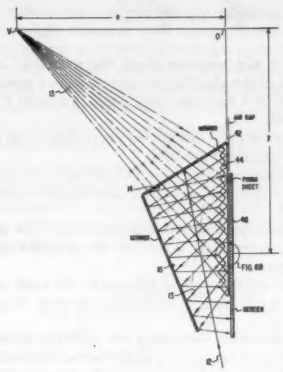
George J. Yevick, 536 Nordhoff Dr., Leonia, N.J. 07605

Continuation-in-part of Ser. No. 931,997, Aug. 8, 1978, abandoned, which is a division of Ser. No. 854,001, Nov. 22, 1977, Pat. No. 4,173,399. This application Nov. 3, 1980, Ser. No. 203,394

Int. Cl.³ G02B *5/04*

U.S. Cl. 350—286 **9 Claims**

1. A dual function transparent, optical prism sheet, the prism sheet being flat on one surface and having a plurality of integral and elongated parallel prisms on its other surface, the prisms being shaped such that, in transverse cross-section of the prism sheet normal to the direction of prism elongation each prism face makes an angle between 0° and 90° to the surface of the prism sheet, the apex angle of the prisms monotonically continuously varying along the length of the prism sheet in a direction normal to the direction of elongation of the said prisms, whereby light incident upon the prism faces from the prism side of the prism sheet at greater than the critical angle is totally reflected at the flat surface of the prism sheet, and whereby light incident upon the prism sheet at an angle less than said critical angle is transmitted through the prism sheet, whereby rays of light striking the prisms at different angles are accommodated and are totally internally reflected



and are rendered parallel to each other upon exiting from the prism sheet.

4,327,969
RADIATION CONCENTRATOR AND DISTRIBUTOR

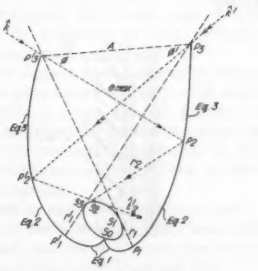
John E. Giutronich, Kensington, and David R. Mills, Randwick, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Sep. 21, 1979, Ser. No. 77,769

Claims priority, application Australia, Sep. 21, 1978, PD6047

Int. Cl.³ G02B *5/08*; F24J *3/02*; F21V *7/00*

U.S. Cl. 350—296 **14 Claims**



1. An ideal or near-ideal radiation concentrator for a distant source of radiation comprising a non-concave linear radiation absorber arranged between facing reflecting side walls to receive radiation reflected therefrom, said side walls each having an edge, which edges define between them an aperture through which radiation passes to said absorber and said side walls meeting along a line on or adjacent a surface of said absorber opposite said aperture, one side wall comprising at least a portion, the curvature of which is in accordance with equation (2) set out below, and the other side wall of which comprises at least a portion, the curvature of which is in accordance with equation (3) set out below:

$$ds=d\,(1+r) \qquad \text{equation (2)}$$

equation (3)

$$\frac{\overrightarrow{dP}}{ds} \cdot t = \frac{\overrightarrow{dP}}{ds} \cdot k,$$

where s is the distance along the perimeter of the cross section of the absorber measured from a point on the line along which said side walls meet to a point P on said one side wall;

ds is an incremental change in s according to the conventions of mathematical calculus;

l is the distance along an incident light ray path from the edge of said one side wall defining the aperture to the point P;

r is the reflected ray path distance from P on said one side wall to a point on a face of the absorber opposite said aperture;

d (l+r) is an incremental change in the total ray path distance l+r according to the conventions of mathematical calculus;

k is a unit vector indicating the limiting direction of the concentrator receptance angle for radiation such that rays incident upon said other side wall at angles of incidence to the surface of the said other side wall less than k will miss the absorber upon reflection; and

t is a unit vector indicating the direction of a ray which has been reflected once by said other side wall at point P and which strikes the face of the absorber facing said aperture tangentially.

4,327,970

DISPLAY DEVICE FOR OPTICALLY REPRESENTING INFORMATION AND A METHOD OF OPERATION

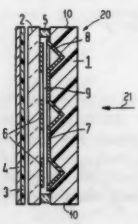
Guenter Baur, Freiburg; Hans Kohlmueller, Erlangen, and Hans Krueger, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 17, 1980, Ser. No. 131,224

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911087

Int. Cl.³ G05D *25/00*

U.S. Cl. 350—363 **16 Claims**



1. A display device for optically representing information, said device comprising a light trap including a fluorescent plate member having each of its edge surfaces being provided with a reflective layer and consisting of a material having an index of refraction greater than 1 and containing fluorescent particles, said plate member having a front surface and a rear surface when taken in the direction of viewing of the device by a viewer, said rear surface having notches at selected positions, said light trap collecting impinging ambient light by means of fluorescent scattering of the light into fluorescent light by the particles and subsequent internal reflection of the collecting light at the surfaces of the plate member; and means for selectively creating and erasing windows for coupling light from the plate member at each of the notches, said means including means for providing a pair of electrodes at each of the notches and means for providing an electrolyte between each pair of electrodes, said electrolyte being a material electrochemically forming a precipitate adjacent an electrode of a selected notch when a voltage is applied to the electrode and dissolving the precipitate when a counter voltage is applied thereto, said electrolyte being of a material electrochemically forming a precipitate selected from a group comprising metal precipitates and organic electrochromic precipitate with the metal precipitate being selected from a group consisting of silver, gold and nickel so that when an indication from a specific notch is desired, a voltage is applied to the electrode associated with the notch to electrochemically form a precipitate from the electrolyte to create a light decoupling window.

4,327,971

ELECTRO-OPTICAL LIGHT MODULATORS, LIGHT WAVELENGTH MULTIPLEX SIGNAL TRANSMITTING APPARATUS AND LIGHT WAVELENGTH SEPARATING SWITCHES UTILIZING THE SAME

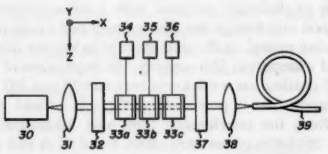
Michikazu Kondo; Yoshinori Ohta, and Mitsuhito Sakaguchi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,373

Claims priority, application Japan, Jun. 5, 1978, 53-67958; Jul. 7, 1978, 53-83134

Int. Cl.³ G02F *1/03, 1/23*

U.S. Cl. 350—388 **1 Claim**

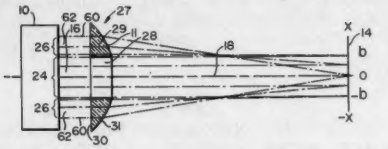


1. In a light wavelength multiplex signal transmitting apparatus including a modulator comprising at least one crystal having a refractive index ellipsoid defining a principal axis and manifesting an electro-optical effect which produces rotation of the principal axis of the refractive index ellipsoid under the influence of an applied electric field, the principal axis forming a light path through said crystal, a source of light directed along said principal axis, said source of light having a light spectrum with a half value width of more than 100 A, and light separating means associated with said crystal for converting a single incident polarized light into polarized light components, the improvement wherein there are a plurality of juxtaposed crystals each having a refractive index ellipsoid, and the light separating means comprising electrode means formed on each of said crystals for providing different periods along said principal axis and obtaining multiple modulated polarized light components, said electrode means including a plurality of pairs of comb-shaped electrodes of different periods juxtaposed along said principal axis, and power means connected to said electrode means for applying an independent voltage to each of said pair of electrodes, each of said pairs of electrodes including a first electrode and a second electrode each having a plurality of fingers, the fingers of said first electrode being interdigitally disposed relative to the fingers of said second electrode, the spacing between said fingers being uniform and different from spacing of fingers associated with other said crystals, with the voltages of said power means comprising modulated signal voltages, and birefringence means located on a light output side of said crystals for transmitting particular wavelength components of light to a plurality of light paths.

4,327,972
REDIRECTING SURFACE FOR DESIRED INTENSITY PROFILE

Albert Brunsting, Miramar, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 22, 1979, Ser. No. 87,110
Int. Cl.³ G02B *3/10, 5/10*
U.S. Cl. 350—437 **13 Claims**



1. An illumination system for a particle analyzer of the type wherein particles are illuminated to produce detectable signals, said illumination system including a radiation source for providing incident radiation having a non-uniform intensity distribution and means for moving a stream of the particles through a predetermined region of an output plane, wherein the improvement in said illumination system comprises:

redirecting means having a central portion and a peripheral portion, each said portion being disposed and configured to receive part of the incident radiation;

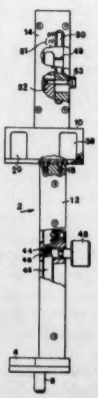
said central portion being constructed to permit the incident radiation to irradiate the predetermined region of the output plane, the predetermined region having a size smaller than the cross-sectional size of the incident radiation;

said peripheral portion being constructed to redirect specific rays of the incident radiation to specific locations in the predetermined region of the output plane so that the specific locations are further irradiated to create, within the predetermined region, resultant radiation having a substantially uniform intensity distribution, whereby the particles are illuminated by the resultant radiation.

4,327,973
OPHTHALMOSCOPIC INSTRUMENT FOR MEASURING EYE DEFECTS

Joshua Raif, Kiryat Ono, Israel, assignor to Laser Industries, Ltd., Tel Aviv, Israel

Filed Jan. 16, 1980, Ser. No. 112,709
Claims priority, application Israel, Jan. 26, 1979, 56509
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—9 **12 Claims**

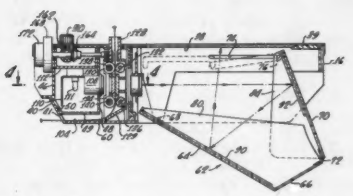


1. An ophthalmoscopic instrument for measuring defects in an examined eye including means for splitting a light beam from an external source into a first portion travelling through a first path to the examined eye from which it is reflected back to a viewing station, and a second portion travelling through a second path to a light scatterer from which it is reflected back to the viewing station; a variable filter in the second path; and means for varying the filter in order to match the intensity of the light arriving at the viewing station from the second path with the light arriving at the viewing station from the first path to provide an indication of the intensity of the light arriving at the viewing station from the first path; characterized in that the instrument further includes a second filter; and means selectively for introducing the second filter into the second path to adapt the instrument for measuring the eye defect of flare, or for removing same from the second path to adapt the instrument for measuring the eye defect of cataract.

4,327,974
MICROFORM VIEWER

Detlef E. Schmidt, Malibu, Calif., assignor to Topper Manufacturing Corporation, Torrance, Calif.

Continuation-in-part of Ser. No. 895,514, Apr. 11, 1978, abandoned. This application Aug. 16, 1979, Ser. No. 66,935
Int. Cl.³ G03B *23/08, 21/30*; G02B *7/04*
U.S. Cl. 353—27 R **37 Claims**



1. A microform viewer comprising

a case,

a film transporter mounted in said case for guiding therethrough film bearing an image to be projected,

means for illuminating film in said transporter, and

a lens system for projecting an image of said illuminated film, said lens system comprising

a lens carrier support plate mounted to said case,

a lens focus plate having a fixed portion attached to said support plate, having a movable portion, and having a relieved hinge portion integrally connecting said fixed and movable portions to one another to permit pivotal motion of said movable focus plate portion relative to said fixed portion,

a lens carried by said movable portion, and

focus control means for selectively and adjustably positioning said movable portion relative to said fixed portion so as to selectively focus said lens.

4,327,975
LIGHT-BEAM-PROJECTING APPARATUS

Lee M. Harris, 4975 North Way, Eugene, Oreg. 97402

Filed Apr. 16, 1980, Ser. No. 141,133
Int. Cl.³ A63J *17/00*
U.S. Cl. 353—50 **2 Claims**

1. Electro-mechanical apparatus for changeably directing the projection axis of a reflected light beam to create thereby, on a remote surface, infinitely varying light-impingement patterns which are related to a variable-frequency electrical signal, said apparatus comprising

a light-beam producer,

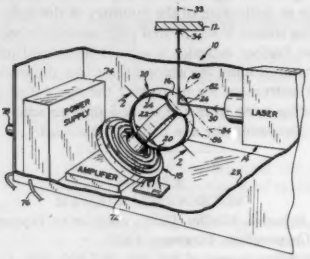
a reflector positioned to reflect a beam produced by said producer,

an oscillatable element,

means for producing oscillation of said element at frequencies related to those of said signal,

a first leg having one resonant frequency, interconnecting said element and said reflector, for producing in the latter, in response to movements occurring in the former, oscillatory rocking motion which occurs about a first axis,

a second leg having a resonant frequency, different from that of said first leg, also interconnecting said element and said



reflector, for producing in the latter, in response to movements occurring in the former, oscillatory rocking motion which occurs about a second axis angularly offset from said first axis, and

a third leg angularly offset from said first and second legs, interconnecting said element and said reflector for supporting the latter in cooperation with said first and second legs.

4,327,976

LIGHT BEAM PROJECTING DEVICE FOR AUTO-FOCUSING CAMERA

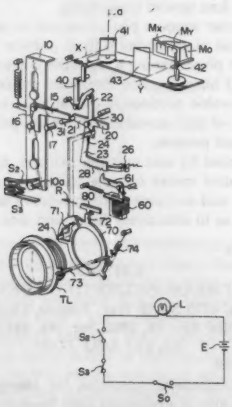
Takashi Kagechika, Kounosu, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Continuation-in-part of Ser. No. 61,365, Jul. 27, 1979. This application Apr. 13, 1981, Ser. No. 253,358

Claims priority, application Japan, Jul. 19, 1978, 53/87941; Fed. Rep. of Germany, Jul. 19, 1979, 2929268

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—25 **5 Claims**



1. A light beam projecting device for an auto-focusing camera provided with an auto-focusing device which comprises a first reflecting means including a fixed mirror for reflecting light from an object toward a first photoreceptor, and a second reflecting means including a movable mirror for reflecting light from the object toward a second photoreceptor, said movable mirror being rotated upon depression of a shutter release button in first and then second scan directions, in which in the first scan of the movable mirror the best focus position is automatically obtained, and in the second scan thereof the taking lens of the camera is automatically brought to the best focus position, said light beam projecting device having a light source which projects a light beam on the object to be photographed when the brightness of the object is not enough for the auto-focusing device to normally operate wherein the improvement comprises means for turning on the light source of said light beam projecting device only during the first scan of the movable mirror upon depression of the shutter release button.

4,327,977

FRICTIONALLY CONTROLLED PHOTOGRAPHIC CAMERA APPARATUS SUCH AS A REFLEX CAMERA

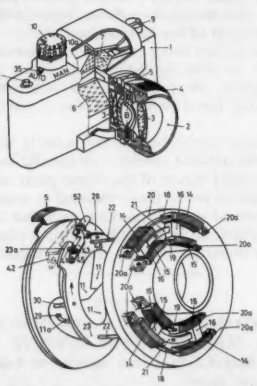
Franz Starp, Mittlere Steige 36, 7547 Wildbad 5, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,275

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001915

Int. Cl.³ G03B *7/14*

U.S. Cl. 354—29 **10 Claims**



1. Photographic camera apparatus, such as a reflex camera, of the type adapted to contain a light sensitive element for sensing ambient light, and having at least one automatic region of camera operation adapted to be controlled by an electronic control circuit in dependence upon sensed ambient light, comprising

objective means incorporating an electrically energizable diaphragm aperture blade system including a driving member and diaphragm blades, the camera apparatus being adapted to contain such light sensitive element behind the diaphragm blades, the driving member being operatively arranged for continuous progressive adjustment movement for automatically adjusting in turn the diaphragm blades from an initial position corresponding to the smallest aperture width to an adjustment end position corresponding to an aperture width adjusted in dependence upon sensed ambient light, and

an electromagnetically disengageable spring loaded friction brake operatively arranged in normally continuous resiliently urged sliding frictional contact with the driving member and responsive to electromagnetic actuation for temporarily disengaging the friction brake from such frictional contact,

whereby the continuous progressive adjustment movement of the driving member is effected under the continuous sliding frictional contact resistance of the friction brake acting thereon and the driving member is simultaneously

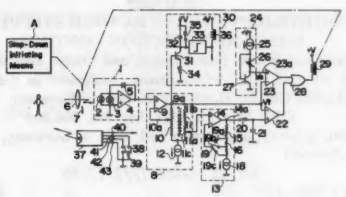
secured thereby in the corresponding adjustment end position for the taking of a photograph, and thereafter the friction brake is temporarily electromagnetically disengageable from such frictional contact with the driving member for operatively energized frictional contact free return movement of the driving member and in turn of the diaphragm blades to the initial position thereof for the next continuous progressive adjustment movement for taking the next photograph.

4,327,978

CAMERA DIAPHRAGM CONTROL DEVICE FOR FLASH PHOTOGRAPHY

Tokuji Ishida, Daito, and Toshio Kobori, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 14, 1980, Ser. No. 207,026
Claims priority, application Japan, Nov. 24, 1979, 54-152223
Int. Cl.[3] G03B *7/085*
U.S. Cl. 354—41 **16 Claims**



1. A camera diaphragm control device comprising:

an objective lens having a diaphragm capable of being stopped-down from a maximum aperture to a minimum aperture;

operable means for initiating the stop down operation of said diaphragm;

means for measuring light from an object of interest through the diaphragm aperture formed by said diaphragm to generate a light measurement output;

means for introducing information of a set film sensitivity to said light measurement output to generate a first signal representative of an exposure time which is proper for the diaphragm aperture at the time of the light measurement;

means for producing preliminary flash light at a substantially constant intensity for a relatively long duration prior to emission of primary flash light to be used in actual photographing;

means for actuating said preliminary flash light producing means in advance of the operation of said diaphragm stop down initiating means;

a first reference signal circuit for generating a first reference signal representative of an exposure time proper for a specific aperture;

means for generating a first actuating signal with a given relationship achieved between said first signal and said first reference signal during the emission of said preliminary flash light; and

means for arresting said diaphragm in response to said first actuating signal.

4,327,979

DATA RECORDING DEVICE FOR CAMERAS

Shinji Tominaga, and Toshiaki Matsumoto, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

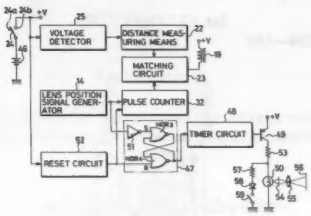
Filed Dec. 8, 1980, Ser. No. 213,768
Claims priority, application Japan, Dec. 10, 1979, 54-159942
Int. Cl.[3] G03B *17/24*
U.S. Cl. 354—105 **6 Claims**

1. In a camera including means for measuring the distance of an object for generating an electric distance signal corresponding to the distance measured;

a photographic lens movable for focusing from a first position to a second position in response to a manual release operation;

lens position signal generating means operatively related to the movement of the lens for generating an electric lens position signal corresponding to the position of the lens which is thus being moved;

a circuit arranged to receive both of said signals for producing a stop signal when the lens position signal attains a predetermined relationship with the distance signal;



arresting means operable upon receipt of the stop signal from the circuit for arresting the lens at the focused position; and a shutter operable after the arresting of the lens by said arresting means;

a data recording device for recording data on a photographic film comprising:

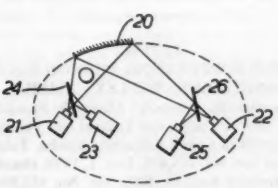
a data recording light source; and an energizing circuit operable for energizing said light source in response to a part of the lens position signal generated at an early stage of the movement of said lens from the first position to the second position.

4,327,980

METHOD AND APPARATUS FOR PRODUCING OPTICAL EFFECTS

Michael C. Godin, 9 Gracefield Gardens, London SW16 2SZ, England

Filed Aug. 13, 1980, Ser. No. 177,585
Int. Cl.[3] G03B *35/08, 35/00*
U.S. Cl. 354—113 **13 Claims**



10. Apparatus for providing an optical effect of an object comprising a first camera having a focal length F_1, lens means of focal length f disposed at a distance d_1 from the forward nodal point of said first camera with the object therebetween, a second camera having a focal length F_1 and a forward nodal point which is at a distance d_2 from the lens means with the lens means in the optical path between said first and second cameras, and the distances d_1 and d_2 determined by the formula

$$\frac{1}{d_1} + \frac{1}{d_2} = \frac{1}{f},$$

optical flats disposed in the optical paths between the cameras

and the said lens means and projection means positioned with respect to each optical flat so that light from the projection means is reflected by said optical flats along said optical paths, and means for superimposing the images produced by the first and second cameras.

4,327,981

ELECTRONIC FLASHGUN

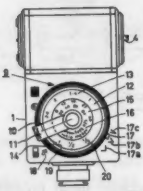
Meerten Luursema, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,467

Claims priority, application Netherlands, Oct. 18, 1979, 7907684

Int. Cl.³ G03B *15/03*

U.S. Cl. 354—145 **8 Claims**



8. An electronic flashgun for a camera comprising, a casing for housing a reflector and a flash discharge tube, an arithmetic unit for deriving a diaphragm stop number-distance combination and comprising first and second concentric discs rotatable about a shaft relative to one another, the first disc having a scale with diaphragm stop numbers and the second disc having a scale with distance values and with the mutual relative position of the scales being manually adjustable dependent upon the value of the film sensitivity, a photosensitive cell located so as to respond to light reflected from an object to be photographed to provide a signal for a dosimeter to switch off the flash tube, a neutral density filter having a variable density coupled to one end of said shaft and moveable in front of the photosensitive cell and with the dosimeter being varied by said filter position, a pointer element coupled to the other end of the shaft for indicating the diaphragm stop number for the camera so that the arithmetic unit displays the correct range value, the pointer element directly indicating the diaphragm stop number on the diaphragm stop number scale of the arithmetic unit.

4,327,982

DEVICE FOR SUPPRESSING MIRROR BOUNCE IN SINGLE LENS REFLEX CAMERA

Masayoshi Yamamichi, Kawasaki; Masayuki Suzuki; Hiroyasu Murakami, both of Tokyo, and Tadashi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 965,428, Dec. 1, 1978, abandoned. This application Aug. 29, 1980, Ser. No. 182,804

Claims priority, application Japan, Feb. 7, 1978, 53-12737

Int. Cl.³ G03B *19/12*

U.S. Cl. 354—156 **8 Claims**

2. A bounce suppression device for a pivotable mirror unit of a single lens reflex camera comprising:

a mirror;

suppression means operatively engaged with said mirror for applying thereto a force for blocking movement of said mirror when said mirror moves to a viewing position;

release means for releasing operative engagement between said mirror and said suppression means to permit rise of said mirror away from said viewing position; and

projection means mounted on said mirror, said projection means being provided in the movement path of said release means so as to receive the force from the release means, and at a predetermined position above said mirror enabling engagement with said suppression means so as to

retreat said suppression means to a predetermined position when the mirror departs from the viewing position.

4,327,983

MOTOR-DRIVEN CAMERA WITH STEPPING IMAGE-RECORDATION CONTROL

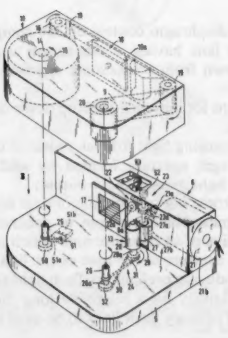
Thomas Geutebrück, Bad Honnef, and Dieter Dörrer, Unkel, both of Fed. Rep. of Germany, assignors to Geutebrück Gerätebau GmbH, Honnef, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,349

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020643

Int. Cl.³ G03B *1/32, 17/46*

U.S. Cl. 354—171 **16 Claims**



1. An arrangement for recording a series of images at predetermined time intervals in the photosensitive material of consecutive sections of a photographic record carrier strip supported on payout and takeup cores, comprising, in combination, a support extending along a plane and having front and rear portions; means for so supporting the cores on said rear portion for rotation about respective axes normal to said plane that the cores extend in one axial direction from said plane and the strip extends in a predetermined path between the cores; means for so shielding the strip that ambient light is prevented from reaching all but an exposed zone thereof at least while the cores are supported on said support; an objective; means for so mounting said objective on said front portion as to be spaced in said one direction from said plane and as to direct light onto the exposed zone of the strip; a shutter mounted at said front portion for rotation about an axis extending front-to-rear in parallelism with said plane at a spacing in said one direction therefrom, and interposed between said objective and the exposed zone to periodically cover the expose the latter to the light passing through said objective; means for intermittently advancing the strip in said path to move successive increments thereof onto the exposed zone, including a fiction segment member mounted at the merger region of the front and rear

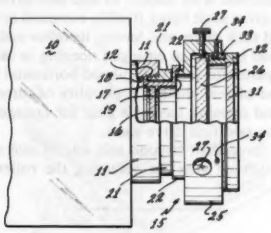
portions for rotation along said path about an axis parallel to said one direction and having a circumferentially incomplete contact surface which frictionally engages one major surface of the strip during the advancing phase of operation of said friction segment member and disengages the same during a rest phase, and means for rotating said takeup core; a reaction member engaging the other major surface of the strip opposite the friction segment member; and means for so synchronously driving said advancing means and said shutter that the latter exposes the exposed zone of the strip during the rest phase of operation of said friction segment member and covers the same during said advancing phase, including an electric motor having an output shaft rotating about an axis extending at right angles to those of said friction segment member and said shutter, a worm mounted on said output shaft for rotation therewith, a first worm wheel connected to said shutter for joint rotation and meshing with said worm, and a second worm wheel connected to said friction segment member for joint rotation and also meshing with said worm.

4,327,984

LIGHT FILTER ASSEMBLY FOR PHOTOGRAPHIC CAMERA

Karl K. Evans, Box 3122, Huntington Park, Calif. 90255

Filed Jul. 27, 1981, Ser. No. 287,522
Int. Cl.³ G03B *9/02, 11/00*
U.S. Cl. 354—270 **10 Claims**



1. In combination:
a camera having a lens structure;
a light filter assembly mounted onto said lens structure;
said light filter assembly comprising;
a first polarizing panel disposed in front of said lens structure;
a transparent disc, mounted parallel to said first polarizing panel;
first means for straining and deforming said transparent disc.

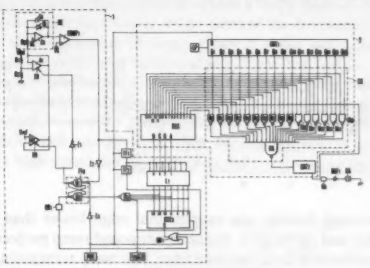
4,327,985

BATTERY-VOLTAGE INDICATOR OF CAMERA

Kazunobu Urushihara, Inagi, and Masanori Uchidoi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,645
Claims priority, application Japan, Dec. 13, 1979, 54-161869
Int. Cl.³ G03B *17/00*
U.S. Cl. 354—289 **16 Claims**

1. A battery-voltage indicator of a camera comprising:
a battery, the voltage of which is to be checked;
said battery for being employed as the power source of circuitry means necessary for the photographing operation;
an analog-to-digital converter for changing the analog value of a battery voltage into digital signal;
said analog-to-digital converter including an integrator being connected to said battery and counter means for counting digital value on operation of the integrator, in accordance with the voltage value of the battery;
an expanding circuit for enlarging the period of the digital output of said converter, wherein said expanded digital output is adapted to vary its period in accordance with variations of the battery voltage; and



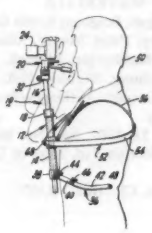
indicator means for indication of the voltage value of said battery by means of the output of said expanding circuit.

4,327,986

MOBILE CAMERA SUPPORT

Rhonda Carter, 520 Van Buren Ave., #301, Oakland, Calif. 94610

Filed Oct. 10, 1980, Ser. No. 196,255
Int. Cl.³ G03B *17/00, 29/00*
U.S. Cl. 354—293 **7 Claims**



1. A mobile camera support comprising:
a. a shaft having mounting means for the camera;
b. a first and a second leg pivotally mounted to said shaft, each leg extending away from said shaft, said first leg including a first section and a second section connected to said first section, said second section extending along the waist of the user for support on the hip of the user;
c. means for holding said shaft to the torso of the user, said holding means being connected to said shaft in at least one place which is spaced along said shaft from said pivotal connection of said first and second legs.

4,327,987

FILM PROCESSOR

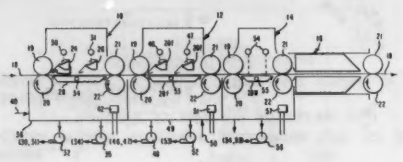
Lawrence B. Friar, Yorklyn; Noel H. Kuhrt, Jr., Wilmington, both of Del., and Joel L. Vanover, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 116,979, Jan. 30, 1980, abandoned. This application Oct. 22, 1980, Ser. No. 196,342
Int. Cl.³ G03D *5/04*
U.S. Cl. 354—317 **10 Claims**

1. In an apparatus including a section for applying a processing liquid to a photosensitive film sheet, entry and exit rolls for transporting a film sheet therethrough and an elongated trough located above and extending transversely of the path of transport,
a foraminous sheet extending lengthwise of the trough, an elongated distribution bar above the trough and conduit

means connected to the bar for delivery of processing liquid thereto,

said bar having perforations directed at the foraminous sheet for discharging liquid thereto,



said trough having one longitudinal edge lower than the other and an integral, angularly disposed ramp projecting downwardly from said one edge, said ramp terminating in close proximity to said path.

4,327,988

APPARATUS FOR TREATING PHOTOGRAPHIC MATERIALS

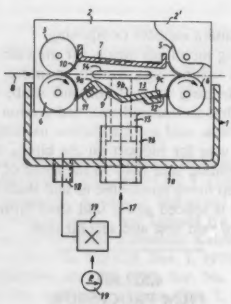
Remi Vanhorebeek, Itegem, Belgium; Erwin Geyken, Neubiberg, Fed. Rep. of Germany; Peter Mayer, Munich, Fed. Rep. of Germany; Helmut Schausberger, Munich, Fed. Rep. of Germany, and Rudolf Brünner, Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 11, 1981, Ser. No. 262,615

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017946

Int. Cl.³ G03D *3/02*

U.S. Cl. 354—320 11 Claims



1. Apparatus for treating photographic materials, particularly film sheets, comprising a first pair of advancing rollers and a second pair of advancing rollers, said pairs of rollers defining a substantially horizontal path for photographic material to be treated, and each pair including an upper roller and a lower roller; walls including upper and lower wall means and defining with said advancing rollers an enclosed treating chamber; means for admitting treating liquid into said chamber at about the level of and in a direction transverse to said path; and a pair of liquid-retaining elements each extending from said lower wall means to one of said lower rollers and engaging the latter substantially along the entire axial length thereof.

4,327,989

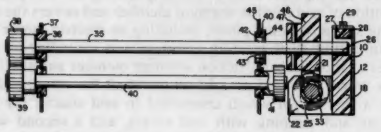
DRIVE MECHANISM FOR PHOTOGRAPHIC FILM AND PAPER PROCESSING MACHINE

Henry F. Hope, and Stephen F. Hope, both of 2421 Wyandotte Rd., Willow Grove, Pa. 19090

Filed Aug. 2, 1979, Ser. No. 62,990

Int. Cl.³ G03D *3/08*

U.S. Cl. 354—322 9 Claims



1. In a photographic film and paper processing machine having a plurality of components for successive treating of photographic film and paper, and in which each of the components is provided with a roller transport rack having a plurality of driven web advancing rollers carried in spaced rack frame plates, the improvement which comprises

driving means for said roller transport rack,

said driving means comprising a first drive shaft having a gear thereon, and

a second drive shaft for said roller transport rack transversely disposed with respect to said first drive shaft,

said second drive shaft being flexibly mounted at one end in one of said rack plates and having its other end extending through and beyond an enlarged opening in said other of said rack plates for free vertical and horizontal movement of said end of said shaft in a plurality of directions, and beyond said opening having a gear for engagement with the gear on said first drive shaft,

said second drive shaft beyond said one of said rack plates having a driving gear for actuating the roller transport rack.

4,327,990

ELECTRONIC PRINTING APPARATUS

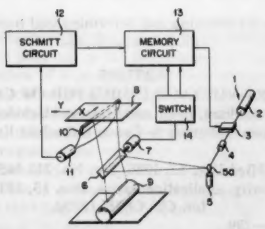
Yoshiaki Tago, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 22, 1980, Ser. No. 114,352

Claims priority, application Japan, Feb. 2, 1979, 54/11277

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R 8 Claims



1. An electronic printing apparatus comprising:

a single laser oscillaor for emitting a laser beam;

a rocking mirror rockable between reading and writing positions;

optical means for conducting a laser beam from said laser oscillator to said rocking mirror;

means for positioning a manuscript having information thereon to be printed so that the manuscript is scanned with the laser beam reflected from said rocking mirror when said mirror is in said reading position;

photoelectric converter means for receiving light reflected from the manuscript and providing an electric signal corresponding to the intensity of the reflected light;

memory means for storing the electric signal;

modulator means operated by the electric signal read from the memory means and corresponding to information previously stored therein for modulating a laser beam emitted by the laser before it impinges on said rocking mirror;

photoconductive means for receiving the reflected light from said rocking mirror when said mirror is in said writing position; and

switch means for blocking the signal from said memory means to said modulator means when said rocking mirror is in said reading position and for conducting the signal from said memory means to said modulator means when said mirror is in said writing position.

4,327,991

TRANSFER PAPER STRIPPER

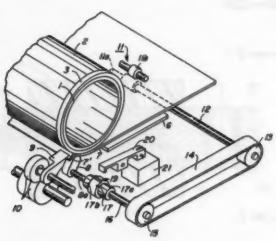
Osamu Takeuchi; Satoshi Chiba; Satoru Komiya; Satoshi Komatsu; Kazuo Asada; Yuji Tokashiki, and Hiroshi Shimazaki, all of Ebina, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 17, 1980, Ser. No. 130,776

Claims priority, application Japan, Mar. 30, 1979, 54-040710

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **3 Claims**



1. Sheet stripping apparatus for use in removing sheets from an imaging member having a light sensitive layer thereon, said apparatus comprising:

a band-like elastomeric layer carried by said imaging member adjacent one end thereof contiguous said light sensitive layer;

means for transporting transfer papers into contact with said light sensitive layer and said band-like elastomeric layer; and

means for contacting said transfer paper and deforming said band-like elastomeric layer through said transfer paper thereby causing the lead edge of said transfer paper to lift off said imaging member.

4,327,992

DRIVING ARRANGEMENT FOR PHOTOCOPY MACHINE

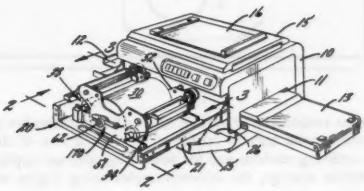
Thaddeus W. Babicz, Arlington Heights, Ill., assignor to APECO Corporation, Des Plaines, Ill.

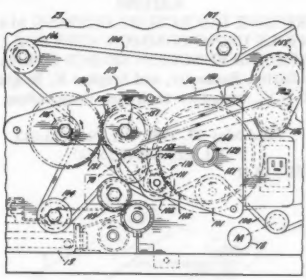
Filed Jul. 10, 1980, Ser. No. 167,453

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **7 Claims**

1. In a photocopy machine a driving source including a motor and flexible drive belt, a photosensitive drum of selenium or the like, the drum having spaced about its periphery (1) a charging station for applying an electrostatic charge evenly to the surface of the drum, (2) an exposing station having associated optics for exposing the drum to an optical image of an original document resulting in an electrostatic image on the drum in the form of charges in the non-light struck areas, (3) a developing station having a developer roller and an associated reservoir for applying finely divided toner to the surface of the drum for development of the electrostatic image, (4) a transfer station in which a copy sheet is engaged with the drum for transfer to the sheet of the developed image, (5) a clean-up station having a clean-up roller and a collector trough for removing residual toner from the surface of the drum in readiness for a new cycle, a first gear train connected between the drive belt and the drum for driving the drum at a low speed, a second independent gear train connected between the drive belt and the rollers for driving the rollers at a relatively high speed, the gear trains being connected to the belt at





points separated from one another, a stationary main frame, a drawer frame having slides providing axial "pull out" movement with respect to the main frame, at least (a) the drum, (b) the developer roller and its reservoir, and (c) the clean-up roller and its collection trough being mounted on the drawer frame, first and second one-way clutches of the axially separable type interposed in the respective gear trains and axially oriented between the frames for completing separate drive connections in the trains when the drawer frame is closed in operating position and for breaking the drive connections when the drawer frame is pulled out for inspection or servicing.

4,327,993

METHOD AND APPARATUS FOR PERFORMING JOB RECOVERY IN A REPRODUCTION MACHINE

John F. Gauronski, Rochester, and Gary M. McGibbon, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,340

Int. Cl.³ G03G *15/00, 13/22*

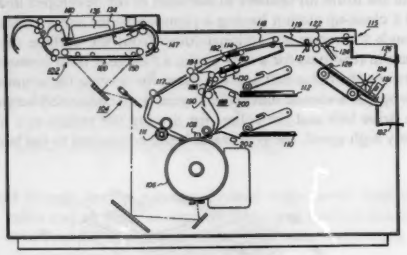
U.S. Cl. 355—14 SH **3 Claims**

3. In a reproduction machine for producing images of an original, the combination of a photosensitive member, a finishing area having first and second copy receiving stations, and a plurality of discrete operating components cooperable with one another and the photosensitive member to electrically produce the images on copy sheets, a first tray for feeding the

copy sheets, a second tray providing a buffer storage for use in duplex operation and job recovery means comprising:

means for electronically indicating a machine condition,

means for determining the type of condition, and



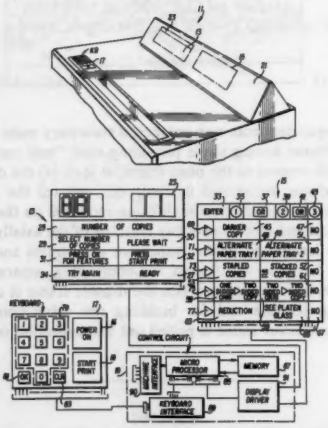
means responsive to certain types of conditions for purging the second tray of copies to a selected one of the copy receiving stations and for providing selected copies to the buffer storage, the selected copies being copies with images on one side.

4,327,994

PROGRESSIVE DISCLOSURE COPYING MACHINE CONSOLE USING COMMON KEYS FOR COPY NUMBER AND FUNCTION SELECT OPERATIONS

Steven D. Barley, Rochester, and Stephen K. Bright, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 27, 1980, Ser. No. 153,642
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **8 Claims**



1. A progressive display operator console for a copying machine comprising:

a keyboard having predetermined keys for selecting a number of copies to be reproduced by said machine;

a copy number display for displaying a selected number of copies;

a message display comprising a plurality of individual operator prompting messages selectively displayed to an operator to instruct an operator in the selection of available copying machine functions; and,

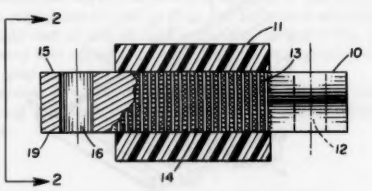
control means coupled to said keyboard, said copy number display, and said message display for operating said message display to display a message prompting an operator to enter a number of desired copies with said predetermined keys of said keyboard and for sequentially displaying selected messges instructing an operator to enter, with said predetermined keys, machine function selection information, said control means being responsive to the number of desired copies and function selection information entered by an operator with said keys to cause said copy number display to display the desired number of copies and for conditioning said copying machine to operate according to said function selection information, said message display providing a function selection message instructing the operator to actuate predetermined ones of said predetermined keys to select a desired copying machine function, said control means being responsive to subsequent actuation of said predetermined ones of said predetermined keys to condition said copying machine to operate according to an operator selected function and to display another function selection message.

4,327,995

BAR PIN FOR USE IN TORQUE RODS

Ross E. Stewart, Norwalk, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 12, 1979, Ser. No. 19,484
Int. Cl.³ F16C *11/00*
U.S. Cl. 403—224 **8 Claims**



1. A bar pin used in torque rods of the type having an opening and a resilient liner extending at least part way around said opening for supporting said bar pin, said bar pin comprising:

a rigid inner member, said rigid inner member having at least a partially knurled surface; and

a plastic outer member surrounding and secured to said rigid inner member at said partially knurled surface, said outer member having an outer dimension to fit within said resilient liner of said torque rod, whereby said torque rod and said bar pin form an essentially integral part.

4,327,996

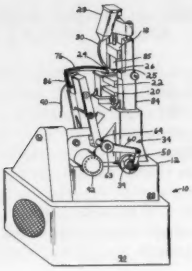
APPARATUS FOR CONTROLLING THE MOVEMENT OF PRESS COMPONENTS

Steven L. Affolder, Berne, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Sep. 2, 1980, Ser. No. 183,256
Int. Cl.³ B30B *11/02*; B22F *3/02*
U.S. Cl. 425—78 **5 Claims**

1. In a briquetting press having a shuttle and a power shaft for oscillation of said shuttle, said shuttle being operatively secured to said power shaft and a rocker shaft, the improvement comprising an adapter plate disposed between said power shaft and shuttle, said rocker shaft operatively secured to said power shaft and moveable in opposite angular directions, means for adjusting said adapter plate circumferentially relatively to said power shaft to control the phase operation of the

output from said power shaft, said shuttle being reciprocable with a characteristic rate, range and phase movement deter-



mined by the operative adjusted position of said adapter plate relative to said power shaft.

4,327,997

CHROME UTILIZATION IN CHROME TANNING

William C. Prentiss, New Britain, and Inaganti V. Prasad, Hatfield, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 11, 1980, Ser. No. 176,877
Int. Cl.[3] C14C *3/16, 3/08*
U.S. Cl. 8—94.26 15 Claims

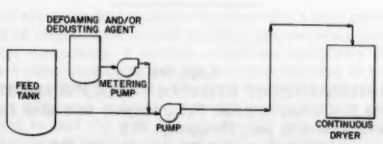
1. In a tanning method wherein an aqueous medium containing hide stock is unhaired, bated and acidified, and a chrome tan is charged to the acidified medium to effect tanning of the hide stock, the improvement which comprises providing in the acidified aqueous medium prior to or simultaneously with addition of the chrome tan, a water soluble amino compound which has no tanning properties of its own but which is capable of enhancing the tanning afforded by a chrome tan in an amount effective to permit reduction in the chrome tan charge while obtaining an equivalent level of tanning.

4,327,998

PROCESS FOR MANUFACTURING OF DYESTUFF PREPARATIONS

Charles W. Sandefur, Summerville, S.C.; Donald F. Lindow, Secaucus, N.J., and Thomas J. Thomas, Summerville, S.C., assignors to Mobay Chemical Corporation, West Pittsburgh, Pa.

Continuation-in-part of Ser. No. 196,239, Oct. 14, 1980, abandoned, which is a continuation of Ser. No. 18,044, Mar. 6, 1979, abandoned. This application Mar. 19, 1981, Ser. No. 245,286
Int. Cl.[3] C09B *67/06, 67/10*
U.S. Cl. 8—524 9 Claims



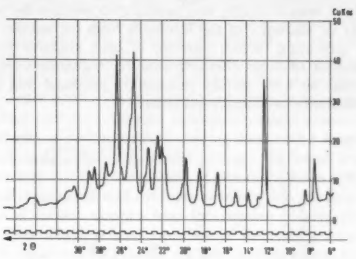
1. A process for the manufacture of a dyestuff or fluorescent whitening agent powder or granulate which in subsequent use will exhibit low dusting and low foam generating properties comprising continuously over a period of at least one hour passing a feed stream having the dyestuff or whitening agent dissolved, slurried or dispersed therein from a holding station to a drying operation, and continuously adding an agent for defoaming, dedusting or both at a constant rate into the feed stream as it passes from the holding station to the drying operation.

4,327,999

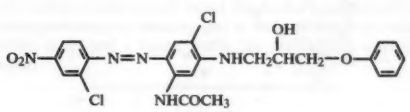
DISPERSE DYE STABLE TO DYEING, AND ITS USE FOR DYEING SYNTHETIC AND SEMI-SYNTHETIC FIBRE MATERIALS

Stefan Koller, Ramlinsburg; Peter Eugster, Arlesheim, and Suresh C. Agarwal, Bottmingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,596
Claims priority, application Switzerland, Jan. 9, 1980, 133/80
Int. Cl.[3] D06P *67/02*
U.S. Cl. 8—526 7 Claims



1. A modification of the azo dye of the formula



which modification is stable to dyeing and which is characterised by the X-ray diffraction pattern (CuK-α radiation) with the characteristic reflexes shown in FIG. 1, and by the d values of the interplanar spacings, calculated from the diffraction pattern:

d [A]: 11.9 (s), 7.2 (vs), 3.61 (vs) and 3.39 (vs).

4,328,000

QUANTITATIVE DETERMINATION OF THE SURFACE CHARGE OF SERUM LIPOPROTEINS

Dieter Horn, Heidelberg; Erik Lueddecke, Ludwigshafen, and Claus C. Heuck, Wilhelmsfeld, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,678
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934228
Int. Cl.[3] G01N *33/50*
U.S. Cl. 23—230 B 6 Claims

1. A method for the quantitative determination of the negative surface charge of serum lipoproteins, wherein the negative surface charge of the particular serum lipoprotein is neutralized by a defined excess amount of a polycation in aqueous solution and the excess amount of positive charges of the polycation is back-titrated against a chromotropic polyanion, in the presence of a metachromatic dye as the indicator.

4,328,001

METHOD OF DETERMINING WEATHERING CHARACTERISTICS OF ROCK FORMATIONS IN EARTH MOVING OPERATIONS

Frank T. Caruccio, and Gwendelyn G. Caruccio, both of 3820 Edinburgh Rd., Columbia, S.C. 29204

Filed Sep. 8, 1980, Ser. No. 184,994
Int. Cl.[3] G01N *33/24*
U.S. Cl. 23—230 EP 15 Claims

1. A method for predicting the potential acidity or alkalinity

of water drainage from rock formations which may be subjected to natural weathering conditions during earth moving operations, comprising the steps of:

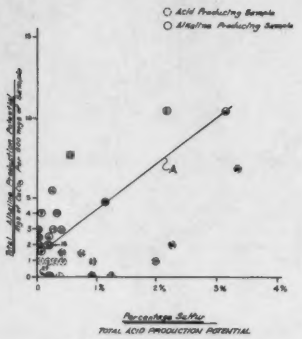
(a) obtaining a plurality of representative rock samples from a selected geographic area of interest;

(b) classifying each sample as to rock type;

(c) subjecting a portion of each rock sample to an environment to permit its oxidation for a predetermined period of time, while periodically leaching the sample portion with an aqueous medium during said period and collecting the leachates obtained therefrom;

(d) chemically analyzing each leachate obtained from each rock sample during said period to determine the net acidity or alkalinity of the leachates from the sample;

(e) subjecting further portions of each characterized rock sample to direct chemical analysis to quantitatively determine its total acidity production potential and its total alkalinity production potential;



(f) interrelating the quantitative results of the total acidity production potential and the total alkalinity production potential of each rock sample of the classified type;

(g) identifying each rock sample interrelation as acidic or alkaline as established by its corresponding leachate net acidity or alkalinity to establish resultant boundary information defining separate areas of acidity interrelations and alkalinity interrelations; and thereafter

(h) classifying additional rock samples from the geographic areas as to rock type, directly chemically analyzing each of the additional samples of each rock type to quantitatively determine its total acidity production potential and its total alkalinity production potential; interrelating the quantitative results of each additional rock sample's total acid production potential and total alkalinity production potential with the boundary information for its particular rock type to identify the same as in said area of acidity or said area of alkalinity, whereby the potential acidity or alkalinity of water drainage from each sample of the type under natural weathering conditions is predicted.

4,328,002

METHODS OF TREATING COAL TO REMOVE SULFUR AND ASH

Robert Bender, 325 Castlegate Rd., Pittsburgh, Pa. 15221

Filed Jun. 15, 1981, Ser. No. 273,912

Int. Cl.³ C10L 9/06

U.S. Cl. 44—1 SR **11 Claims**

1. A process for treating coal to reduce the sulfur and ash content and produce a usable by-product from said sulfur and ash comprising the steps of:

a. preconditioning coal particles in the presence of an aqueous solution of an oxidizing agent,

b. washing said pretreated coal with water,

c. contacting said coal with an aqueous solution of an oxidizing agent until an exothermic reaction between the coal and oxidizing agent peaks and the pH drops to the range of 2 to 3,

d. removing the coal from the oxidizing agent,

e. contacting the coal with a passivating agent until the temperature of the coal drops and the pH rises into the range 3 to 5,

f. neutralizing the coal up to a pH of about 9,

g. washing said coal with water, and

h. drying said coal.

4,328,003

ALCOHOL FUELS OF DECREASED CORROSIVITY

Jack Ryer, East Brunswick; Stanley J. Brois, and Elbert D. Nostrand, both of Westfield, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 6, 1979, Ser. No. 64,124

Int. Cl.³ C10L 1/22

U.S. Cl. 44—53 **7 Claims**

1. A fuel useful in internal combustion engines comprising a major amount of a C_1 to C_5 alkanol and at least a corrosivity-reducing amount of a metal passivating fuel additive selected from the group consisting of:

(A) alkylene polyamines having from 4 to 30 carbons and 2 to 11 nitrogens;

(B) C_{12} to C_{36} acylated derivatives of said alkylene polyamines; and

(C) an amine salt of an alkyl acid phosphate which is of the general formula-

$$\left((R^5O)_2\overset{O}{\overset{\|}{P}}O^- \right)_x \overset{+}{N}HR^1R^2R^3$$

wherein x is 1 or 2, R^5 is a C_8 to C_{13} hydrocarbyl group, R^2 is a hydrogen atom or C_3 to C_{12} hydrocarbyl group, R^3 is a hydrogen atom or C_3 to C_{12} hydrocarbyl group, and R^1 is selected from the group consisting of-

(a) C_8 to C_{18} hydrocarbyl groups or mixtures thereof,

(b) amino hydrocarbyl groups of the formula $-CH_2-_nNHR^4$ where x is 1 or $-CH_2-_nN^+H_2R^4$ when x is 2, wherein n is 2 or 3 and R^4 is (a) above, and

(c) alkylene polyamino groups of the formula $-CH_2CH_2NH-_mH$ wherein m is an integer between 2 and 4, and, mixtures thereof.

4,328,004

STABILIZATION OF ETHANOL-GASOLINE MIXTURES

Alfred R. Globus, Bayside, N.Y., assignor to United International Research, Inc., Hauppauge, N.Y.

Filed Aug. 13, 1980, Ser. No. 177,589

Int. Cl.³ C10L 1/02

U.S. Cl. 44—56 **9 Claims**

1. A stabilized composition of matter comprising gasoline, 10–20% of ethanol containing up to 6% of water and 1–20% of a stabilizer n-hexanol in admixture with at least one member from the group consisting of 3,5-dimethyl-1-hexyn-3-ol, diglycolamine, n-butylamine, and n-butylamine plus 2-pentanone, wherein said group member 3,5-dimethyl-1-hexyn-3-ol can be present in an amount of 3–7% referred to the n-hexanol and said amine group member can be present in a total amount of 3–7% referred to the n-hexanol.

4,328,005

POLYNITRO ALKYL ADDITIVES FOR LIQUID HYDROCARBON MOTOR FUELS

Milton B. Frankel, Tarzana, and Joseph E. Flanagan, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 10, 1980, Ser. No. 195,988
Int. Cl.[3] C10L *1/18, 1/22*
U.S. Cl. 44—57 15 Claims

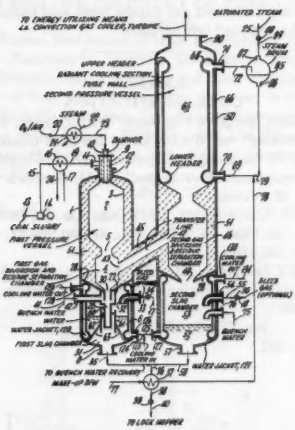
1. A liquid hydrocarbon motor fuel comprising a minor portion of a polynitro alkyl of the general formula $R_1C(NO_2)_2—R_2$ wherein R_1 represents a radical selected from the group consisting of H, $—NO_2$, lower alkyls and mixtures thereof and wherein R_2 is selected from the group consisting of $—CH_2CN$, $—C_2H_4CN$ and mixtures thereof.

4,328,006

APPARATUS FOR THE PRODUCTION OF CLEANED AND COOLED SYNTHESIS GAS

James R. Muenger, Beacon; Edward T. Child, Tarrytown, and Albert Brent, Huntington, all of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 43,918, May 30, 1979, Pat. No. 4,251,228, and Ser. No. 98,457, Nov. 29, 1979, Pat. No. 4,289,502, which is a division of Ser. No. 43,918,. This application Jul. 10, 1980, Ser. No. 168,849
The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.
Int. Cl.[3] B01J *3/00*
U.S. Cl. 48—62 R 18 Claims



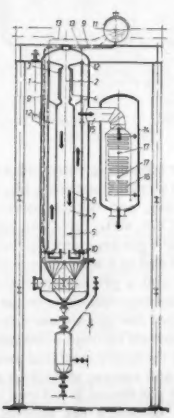
1. An apparatus for continuously producing a high pressure stream of cleaned and cooled synthesis gas, reducing gas, or fuel gas comprising: a vertical cylindrical refractory lined pressure vessel containing a reaction zone comprising an unobstructed free-flow vertical cylindrical central passage, a top central inlet and a bottom central outlet; burner means mounted in said top inlet for introducing into said reaction zone reactant streams comprising solid carbonaceous fuel and free oxygen containing gas, with or without a temperature moderator; a thermally insulated first gas diversion and residue separation chamber with an upper central inlet means connected to the bottom outlet means of said reaction zone by way of a connecting passage; whereby the downflowing hot raw gas stream generated in said reaction zone and containing entrained residue comprising molten slag and particulate solids from the partial oxidation reaction in the reaction zone passes down through said connecting passage and expands into said first gas diversion chamber whose net internal volume is smaller than that of said reaction zone and where the velocity of the hot gas stream is reduced and a portion of said entrained residue is separated, a bottom central outlet means in said first gas diversion and residue separation chamber for discharging said separated portion of residue into a first slag chamber located below, and a side outlet from which exits about 80 to 100 vol. % of the hot raw gas stream less said separated portion of residue; a thermally insulated transfer line with the upstream end connected to the side outlet of said first gas diversion and residue separation chamber, and with the downstream end discharging said hot gas stream from the first gas diversion and residue separation means into the inlet means of a plurality of thermally insulated cyclones connected in series and/or parallel, said cyclones having upper and bottom outlet means and being located in a second separate vertical pressure vessel wherein changes in the direction and velocity of the hot gas stream take place and additional entrained residue is separated from the hot gas stream, a second slag chamber located in the bottom of said second vessel below the bottom outlet means of said cyclones for receiving said separated residue; means defining a cylindrical vertical radiant cooling zone with a longitudinal free-flow unobstructed central passage, the lower portion of said radiant cooling zone being in communication with the upper outlet means of said cyclones whereby hot gas from said cyclones is passed upward into the bottom of said radiant cooling zone where at least a portion of the residue entrained therein is separated by gravity, radiant cooling means located along the inside walls of said second pressure vessel for cooling by indirect heat exchange the hot gas stream from the cyclones passing upward through the radiant cooling zone, an upper outlet means in said second vessel for discharging cleaned and cooled synthesis gas, reducing gas, or fuel gas from said radiant cooling zone, and a lower outlet for discharging separated residue.

4,328,007

APPARATUS FOR GASIFICATION OF FINE-GRAIN COAL

Aruth Rafael, Wesel, Fed. Rep. of Germany, assignor to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,600
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933716
Int. Cl.[3] C10J *3/20*
U.S. Cl. 48—73 3 Claims



1. Apparatus for pressure gasification of fine-grain coal, comprising: a reactor having an exit followed by a waste heat boiler, for cooling generated gas; said waste heat boiler having a radiation section and downstream heat exchanger surfaces;

said reactor having cooling tubes with studs and linked with refractory ramming mix; radiant type heating surfaces being sized so that the gas temperature at the exit of the radiation section is situated below the ash sintering temperature of the coal used; a pressure vessel following said radiation section; said pressure vessel accommodating convection type heating surface banks which are swept by the generated gas; said radiation section comprising two gas passages, both extending substantially through said radiation section through which gas flows in sequence, said passages being formed by two concentrically arranged tube walls formed by tubes welded between each other in a gastight manner, said passages arranged so that gas travels from the reactor downwardly within the inner tube and then upwardly through the passage between the two tube walls to said pressure vessel; said refractory ramming mix being applied to said tubes and being held in place by studs.

4,328,008

METHOD FOR THE PRODUCTION OF CLEANED AND COOLED SYNTHESIS GAS

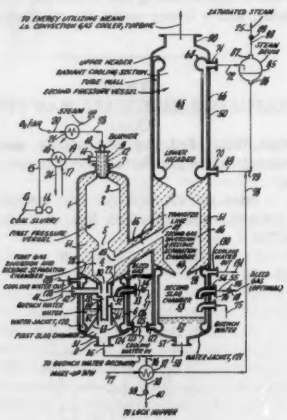
James R. Muenger, Beacon; Edward T. Child, Tarrytown, and Albert Brent, Huntington, all of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 43,918, May 30, 1979, Pat. No. 4,251,228. This application Jul. 2, 1980, Ser. No. 165,305

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ C10K *1/02*

U.S. Cl. 48—197 R **29 Claims**



1. A process for separating entrained solid matter and slag from a hot raw gas stream comprising H_2, CO, CO_2, entrained solid matter and slag, and one or more materials from the group H_2O, H_2S, COS, CH_4, NH_3, N_2, and A as produced in the reaction zone of a gas generator by the partial oxidation of solid carbonaceous fuel at a temperature in the range of about 1800° to 3000° F. and a pressure in the range of 10 to 190 atmospheres, and cooling said hot raw gas stream comprising:

(1) passing said hot raw gas stream directly from said reaction zone downward through a connecting passage at high velocity into a thermally insulated unobstructed free-flow gas diversion and residue separation chamber where the velocity of the gas stream is reduced, said residue separation chamber having a net internal volume which is smaller than that of said reaction zone and having bottom and side outlets, separating by gravity a portion of said solid matter and slag from the gas stream without substantially reducing the temperature of the gas stream, and passing said portion of separated material by gravity through said bottom outlet into a first slag pot located directly below said first gas diversion and residue separation chamber;

(2) passing about 80.0 to 100 vol. % of the hot gas stream from said first gas diversion and residue separation chamber with a portion of said solid matter and slag removed through said side outlet then through a thermally insulated transfer line and then through a plurality of thermally insulated cyclones connected in series, parallel or both, said cyclones having inlet means and upper and lower outlet means and being located in a separate vertical pressure vessel from that containing said gas diversion and residue separation chamber, separating additional solid matter and slag from the gas stream by said cyclones without substantially reducing the temperature of the gas stream, and passing said separated portion of material into a second slag pot located directly below the cyclones;

(3) passing about 80.0 to 100 vol. % of the hot gas stream with a portion of said solid matter and slag removed by said cyclones directly into the bottom of and upward at a reduced velocity through the unobstructed central vertical passage of a radiant cooling zone having a plurality of vertical tubes lining the inside walls, simultaneously cooling said upflowing hot gas stream to below the maximum safe operating temperature for a downstream energy utilizing means by indirect heat exchange with a coolant flowing in said vertical tubes and at least partially solidifying any remaining ash particles in the gas stream, and removing additional solid matter and slag from said gas stream by gravity, and passing said separated portion of material into said second slag pot; and

(4) removing a cleaned gas stream from said radiant cooling zone at a reduced temperature.

4,328,009

COAL GASIFICATION

Reimer Fischer, Bergisch Gladbach; Walter Jüger, Engelskirchen, and Herbert von Waclawiczek, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to GHT Gesellschaft für Hoch-Temperaturreaktor-Technik mbH, Bergisch Gladbach, Fed. Rep. of Germany

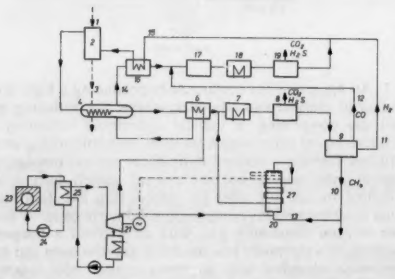
PCT No. PCT/DE79/00093, § 371 Date Apr. 29, 1980, § 102(e) Date Apr. 29, 1980, PCT Pub. No. WO80/00442, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 21, 1979, Ser. No. 192,514

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837988

Int. Cl.³ C10J *3/10, 3/14, 3/18*

U.S. Cl. 48—202 **3 Claims**



1. Method for obtaining methane or synthesis gas from carbon-containing material which comprises subjecting a first part of the carbon in the carbon containing material to hydrogenation in a hydrogenation gasifier to react with hydrogen to produce gaseous constituents containing methane which are released from the hydrogenation gasifier, introducing a hydrogen-containing gas into the hydrogenation gasifier, passing the

residual part of the carbon in the form of coke from the hydrogenating gasifier into a steam gasifier, introducing steam into the steam gasifier to convert the carbon therein to gases containing synthesis gas which is released from an outlet of the steam gasifier, and heating at least part of the methane obtained from the hydrogenating gasifier in a methane cracking furnace in the presence of steam to effect reaction of methane with steam to produce synthesis gas, the combination therewith of heating the steam gasifier by indirect heat exchange with the gaseous constituents released from the hydrogenation gasifier by passing said gaseous constituents through tubes in a steam gasifier, heating the hydrogen containing gas entering the hydrogenation gasifier by indirect heat exchange with the gases containing synthesis gas released from the steam gasifier and heating the methane entering the methane cracking furnace initially by indirect heat exchange with the raw synthesis gas produced in the methane cracking furnace, and heating the methane in the upper temperature range in the methane cracking furnace via an electrical auxiliary heater connected to a turbo generator, and wherein a steam generator arranged in the cooling circuit of a nuclear reactor supplies steam to operate said turbo-generator and steam for said steam gasifier.

4,328,010

PROCESS FOR THE RECOVERY OF PURE CYANOGEN CHLORIDE

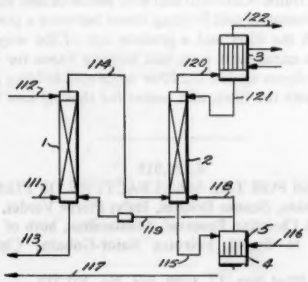
Friedrich Bittner, Bad Soden; Werner Heimberger, Hanau; Kurt Henkel, Rodermark; Norbert Kriebitzsch, Hammersbach; Martin Petzold, Bad Homburg, and Kurt Puschner, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,180

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1979, 2931353

Int. Cl.³ B01D *53/14*

U.S. Cl. 55—51 **16 Claims**



1. A process for the purification of crude cyanogen chloride by fractional distillation comprising introducing the crude cyanogen chloride into a fractionating column, fractionally distilling the cyanogen chloride, again revaporizing the returning condensed cyanogen chloride by direct contact with a vaporizer liquid consisting of water or an aqueous solution whose temperature is above the boiling temperature of the cyanogen chloride at the prevailing column pressure which simultaneously dissolves the impurities out of the condensed cyanogen chloride and which vaporizer liquid is present in such an amount that the returning cyanogen chloride is again vaporized and removing at least a portion of the aqueous solution to maintain the impurities at the desired level.

4,328,011

PROCESS FOR PURIFYING AND COOLING PARTIAL OXIDATION GASES CONTAINING DUST-LIKE IMPURITIES

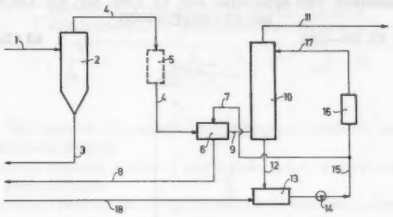
Ulrich Geidies, Waltrop, and Gerhard Wilmer, Hattingen-Niederwenigern, both of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 840,004, Oct. 7, 1977, abandoned. This application Nov. 9, 1979, Ser. No. 92,713

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646865

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—89 **5 Claims**



1. A process for purifying and cooling hot partial oxidation gases formed in a gasifier for solid or liquid fuel, which gases contain dust-like impurities in the form of soot, coal dust and fly ash and gaseous impurities of H_2S, HCN and/or COS, comprising, in order the steps of introducing the partial oxidation gases into a single mechanical dry dust separator at an entry speed between about 15 about 25 m/sec so as to eliminate 70 to 95% of the dust-like impurities; washing the gases in a wet washer having no cooling function with only that amount of water required to remove most of the residual dust from the gas, about 1.1 l/Nm^3 of gas; passing the gas into the bottom portion of a direct gas cooler provided with an internal water circuit; recycling the water discharged from the bottom of said direct gas cooler, passing part into said wet washer while passing another part, after an intermediate cooling step, into the top portion of said direct gas cooler to be the water for the internal water circuit; and discharging cool, purified gas from the top of the said direct gas cooler.

4,328,012

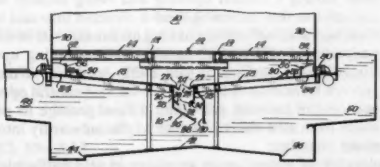
AIR WASHER/SCRUBBER

Steve E. Telchuk, Jr., Des Plaines; Leslie H. Brown, Carol Stream, and Donald F. Gerdes, Park Ridge, all of Ill., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Filed Apr. 8, 1981, Ser. No. 252,038

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—90 **15 Claims**



11. A method of treating a gas with a liquid by passing the same downwardly through a longitudinally extending slot in the bottom of a liquid-washed subfloor, comprising the steps of: providing downwardly converging, generally V-shaped walls leading from the subfloor to the slot, providing upturned ledges on the lower inner edges of the walls causing liquid flowing over the subfloor and said walls to impinge against said upturned ledges and to be thrown by said ledges upwardly

and inwardly over and to completely cover the slot with a dense curtain of liquid; causing gas to be uniformly accelerated downwardly between said walls and through the slot and the curtain of liquid to form a dense sponge-like aerated mass within which the gas and liquid are intimately mixed, and thereafter separating the gas from the liquid.

4,328,013

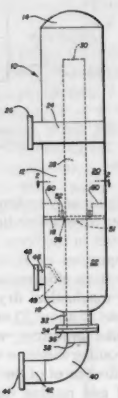
BAFFLE PLATE FOR STEAM SEPARATOR

William L. Godare, Santa Rosa, Calif., and Frederic D. Wells, Jr., Shreveport, La., assignors to W-K-M Wellhead Systems, Inc., Shreveport, La.

Continuation-in-part of Ser. No. 118,937, Feb. 6, 1980, abandoned. This application Jun. 13, 1980, Ser. No. 159,259

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—184 **10 Claims**



1. A steam separator comprising:

a separator vessel presenting a substantially cylindrical inside surface;

an inlet for directing incoming fluid containing a mixture of steam and water into said vessel in a manner to effect swirling motion of the fluid around said inside surface, a water chamber in a lower portion of said vessel for receiving water which impinges said inside surface and drains downwardly, a water outlet for discharging water from said water chamber, a steam chamber in an upper portion of said vessel for receiving steam which rises upwardly;

a steam outlet means, connected to said vessel, for discharging steam from said steam chamber;

a generally horizontal baffle plate mounted in said separator vessel at a location to form a partition which separates said water and steam chambers from one another, said baffle plate having a central opening and being located below said inlet so that incoming fluid is directed into said steam chamber, said baffle plate having an annular rim about the perimeter of said central opening and extending upward from the top surface of said baffle to act as a dam to prevent formation of liquid film over said central opening, said central opening providing a flow passage to permit steam from said water chamber to pass upwardly into said steam chamber;

a plurality of spaced apart openings in said baffle plate of sufficient size to pass the incoming fluid downwardly through said baffle plate into said water chamber;

a plurality of scoop elements on said baffle plate associated with respective said openings, said scoop elements projecting above said baffle plate and over said respective openings with an open end of each scoop element facing substantially in opposition to the direction of motion of the swirling fluid thereby to receive and direct the swirling fluid through said respective opening into said water chamber, each of said scoop elements having an upper portion extending upwardly from said horizontal baffle plate, a side plate along the inner side thereof extending generally vertically from the baffle plate, and a lower portion extending substantially perpendicularly and vertically downwardly from said horizontal baffel plate, whereby said lower portion directs the swirling fluid into said water chamber at an angle equal to approximately ninety degrees with respect to said baffle plate to thereby reduce turbulence and the tendency of the fluid to form a vortex in said water chamber.

4,328,014

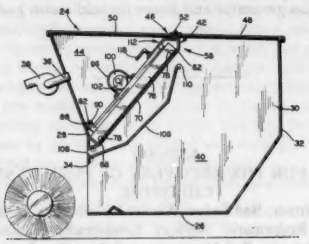
SWEEPER HOPPER WITH FILTER ASSEMBLY

Jack L. Burgoon, and Christopher M. Knowlton, both of Toledo, Ohio, assignors to The Scott & Fetzer Company, Lakewood, Ohio

Filed Apr. 22, 1981, Ser. No. 256,526

Int. Cl.³ B01D *46/10, 46/52, 50/00*

U.S. Cl. 55—300 **14 Claims**



11. A dirt and debris-receiving hopper for a sweeper comprising wall means forming a hopper chamber, a filter assembly extending across said chamber and forming a dirt and debris-receiving chamber and an exhaust chamber therein, said filter assembly comprising a filter supporting frame, at least one filter seated on said frame, a holding frame, means supporting said holding frame relative to said wall means of said hopper to enable movement of said holding frame between a position in contact with the filter and a position out of the way of the filter, means engageable with said holding frame for holding said holding frame against the filter when said holding frame is in contact with the filter, and means for shaking said holding frame.

4,328,015

PROCESS FOR THE MANUFACTURE OF FIBERS

Giuseppe Melan, Besana Brianza, Italy; Pierre Verdet, Aix les Bains, and Christian Besenval, Montmelian, both of France, assignors to Societ Vetrotex Saint-Gobain, Chambry, France

Filed Nov. 17, 1980, Ser. No. 207,711

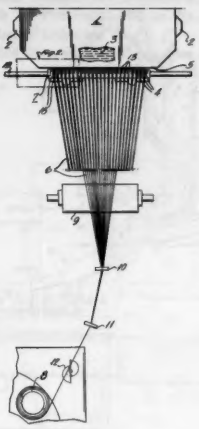
Claims priority, application France, Nov. 20, 1979, 79 28539

Int. Cl.³ C03D *37/025*

U.S. Cl. 65—2 **6 Claims**

1. The process for manufacturing fibers from a thermoplastic mineral material, such as glass, consisting of causing the molten glass to pass through the orifices of a perforated bottom wall of a bushing having portions at higher and lower levels, the orifices being arranged in spaced rows in the portions of the bushing at the lower level, and the bottom wall of the bushing having downwardly open channels between spaced rows of orifices, the channels being exposed to the ambient, drawing into filaments the glass bulbs formed at the exit of the orifices, the process being characterized in that differential drops in temperature are induced in the glass within the bushing between the higher and lower portions thereof by thermal ex-

change with cooling means comprising cooling elements extended along the channels, the differential drop in temperature being regulated as a function of the temperatures of the glass



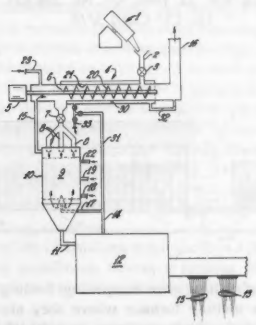
leaving the orifices and the drops in temperature between the level of entry of each channel and the average level of fiberization being at least equal to 20° C.

4,328,016

METHOD AND APPARATUS FOR DRYING GLASS BATCH PELLETS

Charles M. Hohman, Granville; Mark A. Propster, Gahanna, and Stephen Seng, Frazeysburg, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 15, 1980, Ser. No. 216,463
Int. Cl.³ C03B *3/00, 37/025*
U.S. Cl. 65—2 **12 Claims**



1. A process for producing fibers from glass batch pellets which comprises:

a. tumbling said pellets into contact with a first hot gas stream to heat said pellets;

b. introducing said pellets onto a bed of pellets;

c. moving said bed of pellets into contact with a second hot gas stream to further heat said pellets;

d. removing said second hot gas stream from contact with said bed and forming said first hot gas stream comprising said second gas stream;

e. melting the further heated pellets to form molten glass; and,

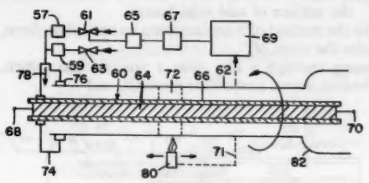
f. forming fibers from said molten glass.

4,328,017

METHOD AND APPARATUS FOR MAKING OPTICAL FIBER WAVEGUIDES

Walter M. Buehl, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 19, 1980, Ser. No. 161,011
Int. Cl.³ C03B *19/06, 37/07, 37/075*
U.S. Cl. 65—3.12 **4 Claims**



1. The method of manufacturing an optical preform, which includes the steps of

passing through a tube a gas which, when heated, forms glass particles,

moving a heat source along the outside of said tube whereby at least a portion of said gas is converted to glass particles and at least a portion of said glass particles is deposited on the inside of said tube,

placing a cylindrically-shaped member of refractory material within said tube so that it extends axially throughout the entire length of said tube, and

heating said member in such a manner that a temperature gradient is generated between said tube and said member, the temperature gradient being greatest at the upstream end of said tube and gradually decreasing toward the downstream end of said tube to provide greater uniformity in the deposition of glass particles throughout the length of said tube.

3. In the method of manufacturing an optical preform, which includes the steps of

flowing through a tube a gas which, when heated, forms glass particles,

moving a heat source along the outside of said tube whereby at least a portion of said gas is converted to glass particles and at least a portion of said glass particles is deposited on the inside of said tube, and

generating throughout the entire length of said tube a temperature gradient whereby the temperature increases toward the axis of said tube,

the invention characterized in that the flow of said gas during said step of flowing is variable, said flow being greatest when said heat source is at the upstream end of said tube, said flow continually decreasing as said heat source moves away from said upstream end.

4,328,018

METHOD AND APPARATUS FOR MAKING OPTICAL FIBER WAVEGUIDES

Robert W. Siegfried, Plano, Tex., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 19, 1980, Ser. No. 161,012
Int. Cl.³ C03B *37/07, 37/075*
U.S. Cl. 65—3.12 **10 Claims**

8. In the method of manufacturing an optical preform, which includes the steps of

passing through a first tube a gas which, when heated, forms glass particles, and

moving a heat source along the outside of said first tube whereby at least a portion of said gas is converted to particulate material and at least a portion of said particulate material is deposited on the inside of said tube,

the improvement which comprises:

moving an axially located heater within said first tube

while maintaining the end of said heater, which is within said first tube, in fixed relation to said heat source and downstream of said heat source,

positioning a second tube within said first tube such that said heater extends from a first end of said second tube,

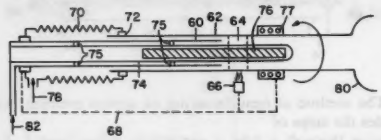
maintaining said first end of said second tube a fixed distance upstream of said heat source,

flowing said gas between said first and second tubes, and

flowing a second gas through said second tube and over the surface of said axial heater.

9. In the method of manufacturing an optical preform, which includes the steps of:

passing through a first tube a reactant gas which, when heated, forms particulate material, and



moving a heat source along the outside of said first tube to form a hot zone therein whereby at least a portion of said gas is converted to particulate material and at least a portion of said particulate material flows downstream from said hot zone where at least a portion thereof is deposited on the inside of said first tube in a region of said first tube that is cooler than that portion of said first tube adjacent to said heat source,

the improvement which comprises:

positioning a heater coaxially within said first tube such that a first end of said heater is within said first tube and extends downstream from said hot zone for a distance of up to two times the diameter of said first tube.

reciprocatingly moving said first end of said heater, and

maintaining said first end of said heater a fixed distance downstream of said heat source.

4,328,019

MELTING SYSTEM AND PROCESS FOR USE IN THE PRODUCTION OF HIGH TEMPERATURE MINERAL WOOL INSULATION

Robert Dejaiffe, Aurora, and Edward L. Kells, Batavia, both of Ill., assignors to Forty-Eight Insulations, Inc., Aurora, Ill.

Filed Feb. 29, 1980, Ser. No. 125,797

Int. Cl.[3] C03B 3/00

U.S. Cl. 65—19 **21 Claims**

1. The method of converting particulate mineral stock material having the melting characteristics of blast furnace slag, including a sharp melting point and low viscosity in the liquid state, to a liquid melt in a carbon-lined electric melter in the production of mineral wool, said method comprising the steps of:

preheating the particulate stock material to temperatures in the range of from approximately 1500° F. to 2000° F. to remove substantially all volatile oxides and chemically combined water, which adversely react with carbon, from said particulate material while heated to within said range;

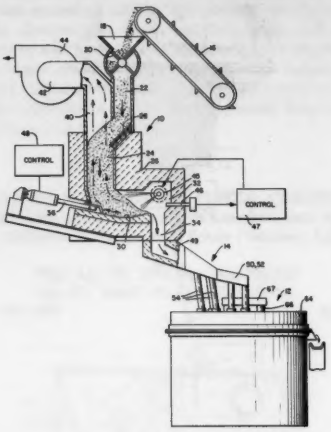
feeding the preheated particulate material to the electric melter; and

further heating said particulate material in said melter to form a substantially homogeneous liquid glass melt at a temperature corresponding to a preferred viscosity.

9. Apparatus for converting particulate mineral stock material to a substantially homogeneous liquid melt in the production of high temperature mineral wool, said apparatus comprising:

a carbon-lined electric melting furnace;

a preheater connected to the furnace to define a closed system substantially isolated from the atmosphere, said preheater having a particulate material inlet, a particulate material outlet, a source of hot gases and means for passing said hot gases in heat exchange relation to said particulate material, to elevate the temperature thereof and to



remove substantially all water and other volatile oxides from said particulate material, and for forcing said volatile oxides away from the carbon-lined electric melting furnace.

4,328,020

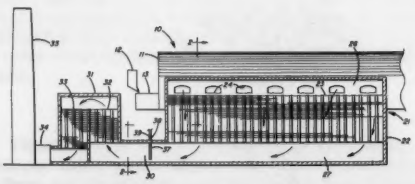
MELTING GLASS WITH REDUCED NO_x EMISSIONS

David E. Hughes, Monroeville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1980, Ser. No. 209,631

Int. Cl.[3] C03B 5/16

U.S. Cl. 65—27 **10 Claims**



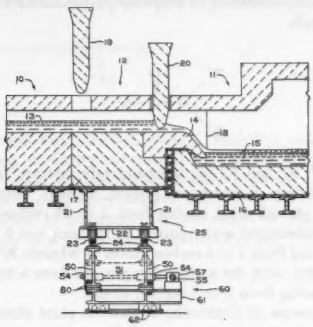
1. A method of melting glass comprising: feeding glass batch materials into a melting furnace where they are heated by combustion of fuel which produces an exhaust gas stream including NO_x compounds; during a series of exhaust phases of a firing cycle, passing the exhaust gas stream through a first regenerator and then through a flue to a second regenerator so as to heat the regenerators, whereby the temperature of exhaust gas passing through the flue rises during each exhaust phase from a temperature below 870° C. to a temperature above 870° C.; alternating the exhaust phases with a series of reverse flow phases during which air is passed through the second regenerator and then through the flue to the first regenerator so as to cool the regenerators; and injecting substantial amounts of ammonia into the exhaust gas stream passing through the flue only when the exhaust gas temperature there is from 870° C. to 1090° C., thereby reducing the NO_x content of the exhaust gas stream.

4,328,021

THRESHOLD CART FOR FLAT GLASS FORMING APPARATUS AND METHOD OF USE

George O. Wehner, Bethel Park; Stephen J. Schultz, and Ronald R. Zito, both of Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 28, 1980, Ser. No. 211,168
Int. Cl.³ C03B *18/16*
U.S. Cl. 65—27 11 Claims



1. Apparatus for producing flat glass by the float process comprising: a furnace for melting glass; a forming chamber adapted to hold a pool of molten metal; a delivery section normally aligned between the furnace and the forming chamber, the delivery section having a refractory channel portion adapted to contain a molten glass stream passing from the furnace to the forming chamber and having a threshold member adapted to extend into the forming chamber for supporting and guiding the stream of molten glass passing into the forming chamber, the channel and threshold secured together to form a unitary delivery section structure; a unitary support structure on which the delivery section is mounted, the unitary support structure being independent from the furnace and forming chamber support structures; and jacking means engaging the unitary support structure adapted to transport the unitary support structure and the delivery section carried thereon as a unit into and out of the aligned position between the furnace and the forming chamber.

9. The method of installing a threshold in a flat glass melting and forming installation having a melting furnace, forming chamber, and an operating threshold location therebetween, comprising:

on a unitary support structure at a site displaced from the operating location of the threshold, securing the threshold to a refractory channel portion adapted to contain a molten glass stream, thereby creating a unitary delivery section adapted to fit between the melting furnace and the forming chamber;

moving the unitary support structure and the assembled delivery section thereon along guide means to bring the delivery section between the furnace and the forming chamber;

jacking the unitary support structure so as to align the threshold to its operative position; and

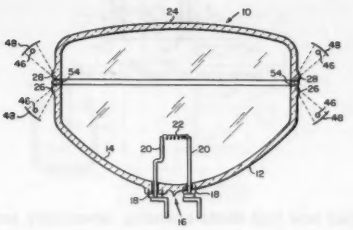
affixing the unitary support structure and the delivery section in place with the threshold thereon in the operating location.

4,328,022

COMPOSITE ARTICLE AND METHOD OF SEALING

John A. Bonk, Big Flats, and Joseph W. Malmendier, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 11,513, Feb. 12, 1979, Pat. No. 4,238,704.
This application Jun. 23, 1980, Ser. No. 162,246
Int. Cl.³ C03B *23/20*
U.S. Cl. 65—43 4 Claims



1. A method of producing a composite article in which two glass bodies are hermetically joined along opposed sealing surfaces by an intermediate layer of a sealing material, each glass body being molded from a borosilicate glass having a coefficient of thermal expansion in the range of 30 to 40×10^{-7}/°C., the method comprising the following steps: forming a sealing mixture composed of a sealing glass and a mill addition, the sealing glass having a softening point below 700° C., a coefficient of thermal expansion greater than that of the borosilicate glass parts, and being a zinc silicoborate consisting essentially, expressed in weight percent on the oxide basis, of 60–70% ZnO, 10–16% SiO_2, and 19–25% B_2O_3, and containing in its composition 1–20% by weight of an infra-red absorbing oxide selected from copper oxide, iron oxide, and mixtures of such oxides, and the mill addition, as compared to the sealing glass, having a substantially higher softening point, a lower coefficient of thermal expansion, and being a glass having the approximate composition of the mineral cordierite; applying a strip-like layer of such sealing material to the sealing surface of at least one part; assembling the glass bodies in contacting relation through the sealing material; and focusing infra-red radiation sources through the walls of the parts onto opposite sides of the sealing material to soften the sealing glass and form a hermetic seal between the glass bodies.

4,328,023

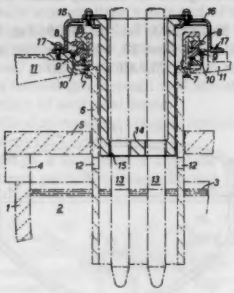
HEAT RETAINING SHIELD IN GLASS GOB FORMER

Peter Vilk, London, England, assignor to B.H.F. (Engineering) Limited, Greenford, England

Filed Oct. 10, 1980, Ser. No. 195,835
Claims priority, application United Kingdom, Oct. 12, 1979, 35481/79
Int. Cl.³ C03B *7/08*
U.S. Cl. 65—328 3 Claims

1. Glass gob forming apparatus which comprises one or more axially reciprocatable plungers each mounted above a respective orifice in the floor of a refractory trough such that on axial reciprocation of the plunger(s) in use of the apparatus molten glass is forced out of the trough through the orifice(s) in the form of gobs, the plunger(s) being surrounding by a refractory cylinder which extends into molten glass in the refractory trough in use, there being provided a refractory heat-insulating tubular shield within the cylinder around the plunger(s) to reduce heat loss from molten glass within the cylinder during use, the heat shield being above the molten glass level within the cylinder and being in the form of a blind tube mounted coaxially within the refractory cylinder, the closed end of the tube facing towards the trough floor and the

plunger(s) extending through openings in the end of the tube, the refractory cylinder being spaced from the plunger(s) and



the blind tube heat shield extending substantially across the space thereby formed to provide heat insulation.

4,328,024

SLOW-RELEASE NITROGEN FERTILIZER EMPLOYING WASTE PROTEINACEOUS ANIMAL FOOD AND METHOD OF MAKING AND USE

George O. Orth, Jr., Seattle, Wash., assignor to Puget Sound Salmon Egg Co., Seattle, Wash.

Continuation-in-part of Ser. No. 885,626, Mar. 13, 1978, Pat. No. 4,206,236. This application Apr. 21, 1980, Ser. No. 142,153
The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.
Int. Cl.³ C05F *1/00*
U.S. Cl. 71—15 **11 Claims**

1. A method of making a slow-release nitrogen fertilizer composition which is stable against decay and decomposition at ambient temperatures for extended periods of time, comprising:

comminuting a waste proteinaceous animal food material to a particle size of not greater than 0.05 inch,

blending a polyol having from 2 to 8 carbon atoms and 2 to 6 hydroxyl groups, which acts as a preservative for the animal food material with the food material, the polyol constituting 4% to 30% by weight, based on the weight of the food material, and

intimately blending with the food material/polyol mixture at least 10% to 40% by weight, based on the weight of the food material/polyol mixture, of attapulgus clay.

4,328,025

MICRONUTRIENT FERTILIZER

Carl E. Whitcomb, Stillwater, Okla., assignor to Bd. of Regents for the Okla. Agri. and Mech. Colleges Acting For & On Behalf of Oklahoma State University, Stillwater, Okla.

Filed Jul. 30, 1979, Ser. No. 61,842
Int. Cl.³ C05F *11/02, 5/00*; C05D *9/02*
U.S. Cl. 71—23 **20 Claims**

1. A micronutrient fertilizer comprised of iron, manganese, copper, boron, and zinc wherein the manganese-to-iron ratio is 8% to 20%, the copper-to-iron ratio is 5% to 10%, boron-to-iron ratio is about 0.4% to 1.0%, and the zinc-to-iron ratio is about 6% to 12%.

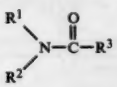
4,328,026

PHOSPHORANYL DERIVATIVES CONTAINING NITROGEN

Jonathan M. Kliegman, Wayne, and Robert F. McCarthy, Red Bank, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 935,945, Aug. 23, 1978, abandoned, and Ser. No. 940,211, Sep. 7, 1978, abandoned. This application Jan. 30, 1979, Ser. No. 7,769
Int. Cl.³ A01N *57/16*; C07F *9/65*
U.S. Cl. 71—86 **38 Claims**

1. The complex addition product of substantially equimolar amounts of 2-haloethylphosphonic acid and an amide selected from the group consisting of polyvinylpyrrolidone and amides of the formula:



wherein R^1, R^3 and R^2 are independently selected from the group consisting of hydrogen, phenyl, napthyl, lower alkyl substituted phenyl, alkyl having from 1 to 24 carbon atoms, optionally substituted with hydroxy or halogen, and R^1 can be alkenyl having from 2 to 6 carbon atoms or wherein R^2 and R^3 taken together with the amido nitrogen can form a heterocyclic ring having from 3 to 5 carbon atoms.

7. The process of contacting a plant or plant situs with a plant growth regulating amount of the complex product of claim 1.

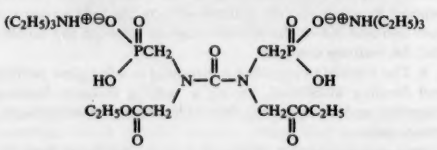
4,328,027

DI-TRIETHYLAMINE SALT OF N,N'-BIS-CARBOETHOXYMETHYL-N,N'-BIS-PHOSPHONOMETHYLUREA AND ITS USE AS A PLANT GROWTH REGULATOR

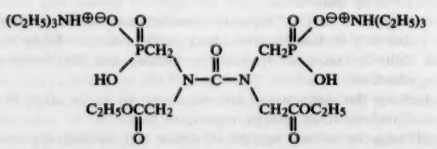
Lawrence L. Buren, Cupertino, and George B. Large, Orinda, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 16, 1981, Ser. No. 254,836
Int. Cl.³ A01N *57/20*; C07F *9/38*
U.S. Cl. 71—86 **3 Claims**

1. A compound having the formula



2. A biologically active composition comprising (a) an effective, plant-regulating, non-lethal amount of a compound having the formula



and (b) an inert diluent carrier.

4,328,028
PLANT GROWTH REGULATORS

Costin Rentzea, Heidelberg; Johann Jung, Limburgerhof; Hubert Sauter, Ludwigshafen; Gerd Heilen, Frankenthal, and Bernd Zeeh, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

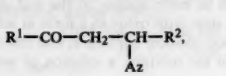
Filed Aug. 25, 1978, Ser. No. 936,741

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739352

Int. Cl.³ A01N *43/64, 43/50*

U.S. Cl. 71—76 **4 Claims**

1. A process for regulating plant growth to effect a reduction in growth height, wherein the plants are treated with an effective amount of a compound of the formula



[I]

where

R^1 denotes furyl, thienyl, pyridyl, naphthyl, unsubstituted phenyl, or phenyl substituted by fluorine, chlorine, bromine, alkyl, alkoxy, trifluoromethyl or nitro,

R^2 denotes alkyl or cycloalkyl, and

Az denotes an imidazolyl, 1,2,4-triazolyl or 1,2,3-triazolyl radical, or a salt or metal complex thereof.

4,328,029
N-PYRIMIDINYLMETHYL-HALOACETANILIDE COMPOUNDS AND HERBICIDAL COMPOSITIONS

Rudolf Thomas; Jörg Stetter, both of Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

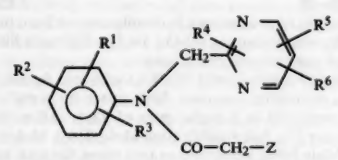
Filed Jul. 24, 1980, Ser. No. 171,784

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932643

Int. Cl.³ A01N *9/22*; C07D *239/34*

U.S. Cl. 71—92 **35 Claims**

1. N-pyrimidinylmethyl-haloacetanilide compound of the formula



(I)

wherein

R^1 is hydrogen or alkyl with 1 to 4 carbon atoms;

R^2 is hydrogen or alkyl with 1 to 4 carbon atoms;

R^3 is hydrogen or alkyl with 1 to 4 carbon atoms;

R^4 is hydrogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms, chlorine or hydroxyl;

R^5 is hydrogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms, chlorine or hydroxyl;

R^6 is hydrogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms, chlorine or hydroxyl; and

Z is chlorine, bromine or iodine.

32. Method of combating weeds, which method comprises applying to the weeds, or their habitat, a herbicidally effective amount of an N-pyrimidinylmethyl-haloacetanilide compound as claimed in claim 1.

4,328,030
STEEL MAKING PROCESS AND APPARATUS

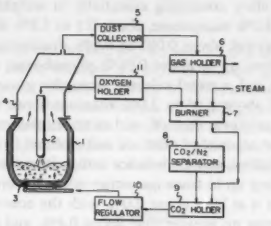
Yasuyuki Tozaki, Ibaraki; Minoru Ueda, Ohno; Takeyuki Hirata, and Syoji Anezaki, both of Ibaraki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed May 9, 1980, Ser. No. 148,531

Claims priority, application Japan, May 24, 1979, 54/64223

Int. Cl.³ C21C *5/32, 5/34*

U.S. Cl. 75—60 **6 Claims**



1. A process for making carbon steels and low alloy steels in a basic oxygen furnace by the top-blowing of pure oxygen and the bottom-blowing of a gas predominantly comprising carbon dioxide, which comprises collecting a waste gas discharged from said basic oxygen furnace, combining the waste gas with at least one gas selected from the group consisting of oxygen and steam, burning the mixture thereof, recovering the resulting combustion gas comprising at least 50% carbon dioxide gas, and blowing it into the molten metal as at least a portion of the bottom-blowing gas, while top-blowing pure oxygen.

4,328,031
METHOD OF MIXED BLOWING FOR REFINING METALS IN A CONVERTER

Pierre J. Leroy, Saint-Germain-en-Laye, France, assignor to Creusot-Loire, Paris, France

Filed Dec. 5, 1980, Ser. No. 213,758

Claims priority, application France, Dec. 28, 1979, 79 31990; Feb. 12, 1980, 80 03091

Int. Cl.³ C21C *5/32, 5/34*

U.S. Cl. 75—60 **3 Claims**

1. In a process for introducing oxygen into a bath of molten pig iron to refine it into steel, wherein said oxygen is blown both onto and beneath the surface of said bath from an overhead lance and into the bath through protected tuyeres submerged beneath the surface of said bath, the improvement comprising:

restricting (i) the total amount of oxygen blown through the tuyeres to a range of from 3% to 25% of the total amount of oxygen required to refine said pig iron and (ii) the flow rate of oxygen blown through said tuyeres throughout the process to a constant or decreasing value;

providing said tuyeres with outlet passages for oxygen having a total cross-sectional area equivalent to the minimum value required to deliver said total amount of oxygen to be blown through said tuyeres, either by adjustment of the diameter of said outlets to a value not exceeding 18 millimeters or by adjustment of the number of outlets, or both; and

optionally during an early stage of said oxygen blowing but during a late stage of said oxygen blowing, blowing a stirring gas through said tuyeres either in admixture with said oxygen or in substitution therefor.

4,328,032

TITANIUM AND NIOBIUM HIGH STRENGTH STEEL ALLOYS

Gerold A. Mancini, Rochester, and George J. Dormer, Fairport, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Mar. 13, 1980, Ser. No. 129,970
Int. Cl.[3] C22C *38/04, 38/06, 38/08, 38/14*
U.S. Cl. 75—124 6 Claims

1. A steel alloy consisting essentially in weight percent of about 0.4 to 3.0% manganese, about 0.1 to 1.8% silicon, up to about 2.5% nickel, about 0.002 to 0.6% aluminum, about 0.03 to 0.5% carbon, up to about 0.04% phosphorus, up to about 0.04% sulfur and a metal selected from the group consisting essentially of about 0.04 to 2.0% titanium about 0.3 to 1.0% niobium and mixtures thereof, said mixtures thereof consisting of at least that amount of titanium and niobium to stabilize the carbon in the alloy, and the balance iron, with concentration of the nickel being up to trace quantities when the concentration of manganese is at least about 2.0% with the concentration of the silicon being no greater than about 0.4%, and the concentration of the nickel being about 1.2% to 2.5% when the concentration of the manganese and nickel combined is about 2.9% or less, with the concentration of the manganese being no less than about 0.7%.

4,328,033

CURABLE SILICATE COMPOSITION CONTAINING METAL CONDENSED PHOSPHATE HARDENER COATED WITH REACTION PRODUCT FROM A METAL ALUMINATE AND/OR A METAL BORATE

William G. Boberski, Gibsonia; Peter M. Nowakowski, Glenshaw, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 4, 1981, Ser. No. 259,870
Int. Cl.[3] C09D *1/02*
U.S. Cl. 106—74 21 Claims

1. An aqueous curable composition comprising:
(A) a water-soluble and/or water-dispersible silicate;
(B) a metal condensed phosphate hardener, said metal condensed phosphate hardener comprising a core of metal condensed phosphate and a coating on said core comprising a reaction product of acid and a metallate selected from the group consisting of metal aluminate, metal borate and a mixture thereof; and
(C) water.

4,328,034

FOAM COMPOSITION AND PROCESS

Charles N. Ferguson, 1623 "X" St., Dallas, Tex. 75220

Filed May 27, 1980, Ser. No. 152,994
Int. Cl.[3] C04B *31/00*
U.S. Cl. 106—75 18 Claims

1. A mineral foam composition consisting essentially of a dilute aqueous solution of sodium silicate having a specific gravity ranging from about 10° to about 40° Be.; from about 0.01 to about 0.1 kilograms alkali metal hydroxide per liter of dilute aqueous sodium silicate solution; from about 1 to about 3.3 kilograms of filler material per liter of dilute aqueous sodium silicate solution having the alkali metal hydroxide solubilized therein; and silicon in an amount such that the ratio of silicon to filler material ranges from about 1:50 to 1:10 by weight.

4,328,035

CONSTRUCTION OF BUILDING MATERIALS

Owen G. Ingles, Kensington, and Nam Lim, Chester Hill, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Oct. 16, 1980, Ser. No. 197,662
Claims priority, application Australia, Oct. 24, 1979, PE1054; Jun. 13, 1980, PE4034
Int. Cl.[3] C04B *19/04*
U.S. Cl. 106—84 14 Claims

1. A process for the production of construction materials from soils, comprising the steps of heating the soil to a temperature sufficient to destroy substantially the property of the soil to swell with changing levels of moisture but without causing any of the soil constituents to melt; adding to the soil, either before or after the heating step, iron oxide in a form at least as finely comminuted as the soil to form a mixture; and introducing into, or creating within the mixture, a solution of sodium silicate.

4,328,036

HIGH TEMPERATURE EXPANDING CEMENT COMPOSITION AND USE

Erik B. Nelson, Tulsa County, and Louis H. Eilers, Rogers County, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 19, 1980, Ser. No. 218,315
Int. Cl.[3] C04B *7/00*
U.S. Cl. 106—85 21 Claims

1. A hydratable cement composition useful for preparing pectolite-containing expanding cement at temperatures above about 150° C. which comprises:
Component (A) comprising a water soluble sodium salt of a weak acid, a 0.1 molar aqueous solution of which salt has a pH of between about 7.5 and about 11.5; Component (B) a calcium source; and Component (C) a silicon source;
wherein the atomic ratios of sodium:calcium:silicon range from about 0.3:0.6:1 to about 0.03:1:1.

4,328,037

PROCESS OF PRODUCING HYDRAULIC CEMENT FROM FLY ASH

Turgut Demirel; Dah-Yinn Lee, and Mustafa Boybay, all of Ames, Iowa, assignors to Iowa State University Research Foundation Inc., Ames, Iowa

Filed Dec. 29, 1980, Ser. No. 220,993
Int. Cl.[3] C04B *9/04*
U.S. Cl. 106—85 7 Claims

1. The process of producing a hydraulic cement from particulate coal fly ash containing Al_2O_3, Fe_2O_3, CaO and SiO_2 as the principal constituents, comprising:
(a) reacting phosphoric acid (H_3PO_4) with said fly ash, said H_3PO_4 containing not over 30% water by weight and being employed in a molar ratio of 0.6 to 2.0 moles of H_3PO_4 per Fly Ash Acidification Mole (FAA Mole), said FAA Mole being computed as two times the total moles of Al_2O_3 and Fe_2O_3 in the amount of fly ash used plus 0.67 times the moles of CaO therein:
(b) continuing said reaction until the fly ash is convented to an aggregated hydraulic cement; and
(c) comminuting said cement aggregates to a particulate form to facilitate use as a cement.

4,328,038

RESIN COATED ALUMINUM

Briggs, Garry L., Edmonton, Canada, assignor to BJ-Hughes Inc., Houston, Tex.

Filed Nov. 13, 1980, Ser. No. 206,508
Int. Cl.[3] C04B *21/02*
U.S. Cl. 106—87 8 Claims

4. A cement composition comprising cement, sufficient water to reproduce a pumpable slurry, and an effective amount

of an improved particulate aluminum expansive additive having a controlled rate of expansion in a cement-water slurry comprising coated aluminum particles wherein said particles are coated with a gasoline and water insoluble wood resin;

said resin coated particles being utilized in said cement-water slurry in the range of 0.05 to 1.0 weight percent based on the dry weight of cement to give a cement composition which initially expands in 1 to 4 hours and continues to expand for upwards of 20 days at a controlled rate.

4,328,039

HIGH SULPHATE SLAG CEMENT AND METHOD FOR MANUFACTURING THIS CEMENT

Yoshitaka Masuda, 54, Koro, Kodera-cho, Kanzaki-gun, Hyogo Prefecture, Japan (679-21)

Filed Apr. 7, 1980, Ser. No. 138,220

Int. Cl.³ C04B 7/02

U.S. Cl. 106—103 **7 Claims**

1. A high sulphate slag cement with a Blaine specific surface ratio of 4,500 to 5,500 cm^2/g consisting of:

a. Approximately 80–85% blast furnace water slag by weight which in turn contains 40–50% CaO, 14–20% Al_2O_3, 30–35% SiO_2, and 5–8% MgO;

b. 13–17% $CaSO_4$ calculated as anhydrite;

c. 1.5–2.5% Portland cement;

d. 0.1–0.5% of at least one compound selected from the group of organic carboxylic acids or acid salts consisting of tartaric acid, sodium tartrate, potassium tartrate, citric acid, sodium citrate, potassium citrate;

e. 0.03–0.6% of at least one water-soluble higher molecular weight compound selected from the group consisting of methyl-cellulose, sodium stearate and sodium lauryl benzenesulfonate; and

f. 0.6–2% sodium sulfate.

4,328,040

PROCESS FOR THE PRODUCTION OF TITANIUM DIOXIDE PIGMENTS WITH HIGH WEATHER RESISTANCE

Peter Panek; Peter Woditsch; Eckhard Bayer, and Heribert Stütgens, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 62,271, Jul. 30, 1979, abandoned. This application Sep. 8, 1980, Ser. No. 184,692

Int. Cl.³ C09C 1/36

U.S. Cl. 106—300 **3 Claims**

1. In the production of titanium dioxide pigments with improved chalking resistance and gloss retention by coating with an oxide and/or phosphate of zirconium and of titanium, aluminum and/or silicon, the improvement which consists essentially of coating with zirconium by slowly adding to an aqueous alkaline suspension of the titanium dioxide pigment in which the pigment particles are present in thoroughly dispersed form an alkali metal or ammonium zirconium carbonate complex in aqueous solution which has a pH-value above about 8.5 and is added in about 0.2 to 5% by weight, expressed as ZrO_2, based on the pigment, thereafter adding an alkaline reacting aqueous solution of at least one compound of silicon and aluminum, after which the suspension has a pH-value of about 12, and slowly precipitating the zirconium by slowly adding an aqueous solution of at least one acid reacting compound of titanium, aluminum, silicon and phosphorus.

4,328,041

COMMINUTED INORGANIC MATERIALS

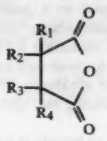
Michael E. Wilson, Inman, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jun. 9, 1980, Ser. No. 157,880

Int. Cl.³ C04B 31/40

U.S. Cl. 106—308 Q **4 Claims**

1. A composition of matter which comprises a comminuted inorganic material which has been treated with a substituted succinic anhydride of the formula:



wherein at least one of R_1, R_2, R_3 and R_4 is a substituent selected from alkyl, alkenyl, alkynyl or aralkyl group having from 1 to about 30 carbon atoms or a substituted derivative thereof, and the other substituents are hydrogens.

3. The composition of matter of claim 1, wherein said comminuted inorganic material is a filler which is a metal, metal oxide, carbon black, sulfur, calcium carbonate, silica or clay.

4,328,042

PREPARATION OF METALLIC PIGMENTS HAVING A METALLIC LUSTER

Werner Ostertag, Gruenstadt; Knut Bittler, Speyer, and Gustav Bock, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 12, 1980, Ser. No. 215,759

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003352

Int. Cl.³ C09C 1/22

U.S. Cl. 106—308 B **6 Claims**

1. A process for the preparation of colored pigments which have a metallic luster and consist of a metallic core whose surface is at least partially covered with an iron oxide, wherein iron pentacarbonyl is oxidized to iron oxide in a fluidized bed of the metallic cores with oxygen at above 100° C. and the amount of iron pentacarbonyl vapor introduced into the fluidized bed does not exceed 5% by volume, based on the total gases introduced into the fluidized bed over the same period of time.

4,328,043

METHOD OF INCREASING SUGAR EXTRACTION EFFICIENCY FROM SUGAR-CONTAINING PLANT TISSUE WITH USE OF CARBON DIOXIDE

Arthur H. Freytag, Longmont, and Rodney D. Cooke, Loveland, both of Colo., assignors to Great Western Sugar Company, Denver, Colo.

Continuation-in-part of Ser. No. 142,664, Apr. 22, 1980, abandoned. This application Oct. 14, 1980, Ser. No. 196,548

Int. Cl.³ C13D 1/08

U.S. Cl. 127—44 **16 Claims**

1. A method of extracting sugar from sugar-containing plant tissue comprising contacting sugar-containing plant tissue near the juice end of a diffusion process with diffusion water in the presence of an amount of carbon dioxide effective to increase the efficiency of sugar extraction from the plant tissue, said carbon dioxide being added directly to the diffusion water.

4,328,044

METHOD FOR CLEANING METAL PARTS

Jack W. Chasteen, Kettering, Ohio, assignor to University of Dayton, Dayton, Ohio

Continuation-in-part of Ser. No. 874,915, Feb. 2, 1978, Pat. No. 4,188,237. This application Feb. 6, 1980, Ser. No. 119,061

The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.

Int. Cl.³ B08B 5/00

U.S. Cl. 134—2 **11 Claims**

1. In a method for brazing or otherwise metallic bonding metal parts comprising cleaning said parts to depassivate the surface and thereafter brazing or forming a metal-metal bond,

the improvement which comprises cleaning said parts by a process consisting essentially of:

(a) placing the part in a hermetically sealed chamber,

(b) subjecting said part to a gaseous atmosphere in said chamber, said atmosphere containing the elements C—O—H—F and including CF_4, C_2F_4, HF and H_2 in amounts sufficient to clean said metal parts and having an H/O ratio of 10^4 or greater,

(c) at the same time heating said chamber to a temperature of less than 1000° C.,

(d) allowing said part to remain in said heated chamber filled with said atmosphere for a period of time sufficient to clean said part and render it brazable or otherwise able to form a metal-metal bond, and

(e) cooling said chamber and said part prior to removing it from said chamber.

4,328,045

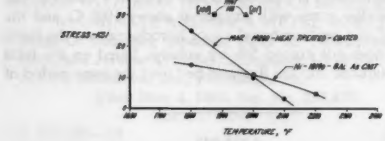
HEAT TREATED SINGLE CRYSTAL ARTICLES AND PROCESS

David D. Pearson, West Hartford; Frank D. Lemkey, Glastonbury, and Bernard H. Kear, Madison, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 973,193, Dec. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 913,131, Jun. 6, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 177,047

Int. Cl.³ C22F *1/10*

U.S. Cl. 148—3 **6 Claims**



1. A method for producing a high strength superalloy article including the steps of:

a. providing a molten alloy of a composition falling within points A-B-C-D of FIG. 1, said composition being essentially saturated with respect to refractory metal content;

b. directionally solidifying the alloy at a rate of at least 5 inches/hr., in a gradient which is steep enough to permit dendritic solidification, to provide a single crystal with a refined cast microstructure consisting mainly of gamma prime particles in a gamma matrix and containing dendrites which are low in refractory metal content and interdendrite regions which are high in refractory metal content;

c. homogenizing and solutionizing the cast article at a temperature above the gamma prime solvus and near but below the solidus for a period of time sufficient to dissolve the gamma prime phase and homogenize the microstructure with respect to refractory metal content, reducing the degree of refractory metal segregation by at least about 90%;

d. cooling the microstructure at a rate which is sufficient to substantially suppress the reprecipitation of the gamma prime phase and to provide a microstructure which is supersaturated with refractory elements; and

e. aging the article at a temperature between 1500° and 2100° F. to reprecipitate the gamma prime phase on a fine scale;

whereby the heat treated alloy will not develop refractory metal rich embrittling phases in service under conditions of elevated temperature and whereby an alloy of 5.8 wt. % Al, 14.3 wt. % Mo, 6 wt. % Ta, balance Ni will exhibit a time to 1% creep at 1800° F./30 Ksi of about 600 hours in the [100] orientation.

2. A method for producing a high strength superalloy article including the steps of:

a. providing a molten alloy of a composition falling within points A-B-C-D of FIG. 1, said composition being essentially saturated with respect to refractory metal content;

b. directionally solidifying the alloy at a rate of less than 0.15 inches/hr., in a gradient which is steep enough to permit plane front solidification, to provide a single crystal with a refined cast microstructure consisting mainly of gamma prime particles in a gamma matrix, said microstructure being free from dendrites;

c. solutionizing the cast article at a temperature above the gamma prime solvus and near the solidus for a period of time sufficient to dissolve the gamma prime phase;

d. cooling the microstructure at a rate which is sufficient to substantially suppress the reprecipitation of the gamma prime phase and to provide a microstructure which is supersaturated with refractory elements; and

e. aging the article at a temperature between 1500° and 2100° F. to reprecipitate the gamma prime phase on a fine scale;

whereby the heat treated alloy will not develop refractory metal rich embrittling phases in service under conditions of elevated temperature and whereby an alloy of 5.8 wt. % Al, 14.3 wt. % Mo, 6 wt. % Ta, balance Ni will exhibit a time to 1% creep at 1800° F./30 Ksi of about 600 hours in the [100] orientation.

4,328,046

CHROMATE CONVERSION COATINGS

Harold E. Fuchs, Kansas City, Mo., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 197,051

Int. Cl.³ C23F *7/26*

U.S. Cl. 148—6.2 **13 Claims**

1. A method of forming a chromate conversion coating on the surface of an article having a surface of a metal taken from the group of cadmium and zinc, which comprises:

reacting the metal basis with an acidic chromating bath to form a chromate conversion coating over the metal basis; and

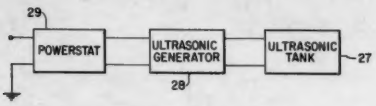
without intermediate rinsing in water, immersing the formed coating in an alkaline solution at a temperature in the range between 15° C. and including 25° C. and having a pH value in a range bounded by and including the values of 11 and 12, such solution being water rinsable without leaving a noticeable color change on the formed chromate conversion coating.

4,328,047

METHOD FOR INDUCING A PASSIVE SURFACE ON BERYLLIUM

William E. Dalton, 84-25 115th St., Richmond Hill, N.Y. 11418

Filed Nov. 25, 1980, Ser. No. 210,208
Int. Cl.³ C23F 7/26
U.S. Cl. 148—6.2 2 Claims



1. A sonochemical method for passivating beryllium comprising the steps of:

(a) providing the surface areas to be treated of a beryllium piece with a smooth, polished surface,

(b) immersing said piece in an aqueous solution having a predetermined temperature and containing sodium fluoride (NaF) and chromic acid (CrO_3),

(c) subjecting said solution to ultrasonic agitation,

(d) controlling said ultrasonic agitation to be below the cavitation level of said solution; and

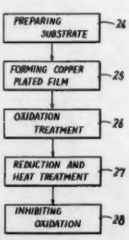
(3) maintaining the aforesaid level of ultrasonic agitation for a selected period of time.

4,328,048

METHOD OF FORMING COPPER CONDUCTOR

Atsuo Senda, Ootsu; Tohru Kasanami, and Takuji Nakagawa, both of Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 8, 1980, Ser. No. 194,980
Claims priority, application Japan, Aug. 30, 1979, 54-111241
Int. Cl.³ C23F 7/02
U.S. Cl. 148—6.31 6 Claims



1. A method of forming a copper conductor, comprising the steps of

preparing a ceramic substrate having a surface,

forming a copper film on the surface of said ceramic substrate,

oxidizing said copper film, thereby to turn said copper film to oxidized copper, and

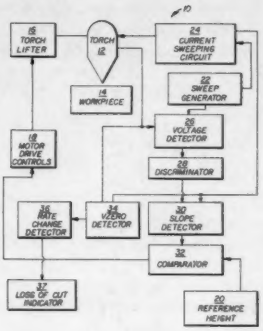
above 500° C. heat treating said oxidized copper film in a reducing atmosphere, thereby to turn the surface layer portion of said oxidized copper film to copper.

4,328,049

TORCH HEIGHT SENSING APPARATUS

Richard W. Richardson, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00174, § 371 Date Mar. 20, 1979, § 102(e) Date Mar. 20, 1979, PCT Pub. No. WO80/02001, PCT Pub. Date Oct. 2, 1980
PCT Filed Mar. 20, 1979, Ser. No. 84,000
Int. Cl.³ B23K 7/00
U.S. Cl. 148—9 R 18 Claims



18. A method for generating a signal representative of the spacing of a cutting torch (12) from a workpiece (14), comprising:

biasing the torch (12) and inducing a positive current flow from the torch (12) to the workpiece (14);

producing a current signal;

driving the current incrementally from the torch (12) through the torch flame to the workpiece (14); and

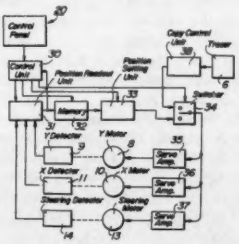
detecting the voltage across the torch flame for a plurality of current increments.

4,328,050

METHOD OF CONTROLLING AN OPERATION OF A COPY-CUTTING APPARATUS

Takeshi Ashizawa, Tokyo, and Motoaki Yasumura, Kawagoe, both of Japan, assignors to Kabushiki Kaisha Tanaka Seisakusho, Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,515
Claims priority, application Japan, Dec. 11, 1978, 53-152039
Int. Cl.³ B23K 7/02; G05B 19/42
U.S. Cl. 148—9 R 10 Claims



1. A method of controlling the operation of a copying apparatus which includes a tracer for tracing automatically a contour of a pattern to be copied and a working machine having a working head movable in conjunction with the tracer in a given relationship for effecting a given working operation for an object to be worked comprising the steps of;

prior to an actual working operation;

moving the tracer manually with respect to the pattern to be traced to detect coordinates of the tracer at respective operational points which include at least a working start point, a copy start point, and a copy end point, and storing the coordinates thus detected in a memory;

and during the actual working operation;

reading the stored coordinates from the memory to control automatically the movement of said tracer in such a manner that until the tracer reaches a copy start point the copying apparatus is set in a position setting mode in which the tracer is moved under the control of the read-out coordinates, and after the tracer has reached the copy start point the copying apparatus is switched into a copying mode in which the movement of said working head is controlled by the movement of the tracer which follows the pattern.

4,328,051

SYSTEM FOR TRANSFERRING IMAGES

Rose B. Robinette, 755 Middlesex Rd., Baltimore, Md. 21221

Filed Apr. 3, 1980, Ser. No. 136,960

Int. Cl.³ B32B *31/16*; B44D *2/00*

U.S. Cl. 156—62 **1 Claim**

1. An image transfer method for transferring to a final substrate of cloth images which may include color and may include outline comprising the steps:

(a) selecting an existing image to be transferred from an initial substrate to a final substrate;

(b) overlaying the existing image with a light-transmitting impervious film in contact with the existing image;

(c) forming a traced image of the existing image on the light-transmitting impervious film by tracing color and outline of the existing image;

(d) removing the light transmitting film from the existing image and overlaying the traced image with a reticulate sheet such as cheesecloth stretched in contact therewith and having apertures large enough for visibility, through the apertures, of the tracing of the traced image;

(e) forming a retraced image on the reticulate sheet by tracing color and outline of the traced image onto the reticulate sheet;

(f) overlaying the final substrate with the reticulate sheet;

(g) transferring color and outline of the retraced image to the final substrate by tracing through the apertures in the reticulate sheet following the retraced image on the reticulate sheet; and

(h) removing the reticulate sheet and completing the image on the final substrate by completing any interruptions caused by reticulations of the reticulate sheet.

4,328,052

RETAINER ASSEMBLY FOR MOLDING STRIPS AND METHOD OF SECURING MOLDING STRIPS IN PLACE

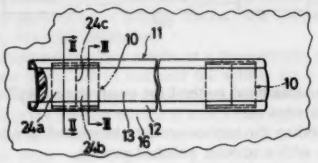
Yutaka Watanabe, Toyoake, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 21, 1979, Ser. No. 96,398

Claims priority, application Japan, Nov. 28, 1978, 53/164016[U]

Int. Cl.³ B32B *7/04*

U.S. Cl. 156—91 **7 Claims**



1. A retainer assembly for securing a molding strip to an exterior metal panal of an automobile comprising:

a body;

means on said body for engaging with said molding strip;

an attachment portion defining a surface of said body adapted to confront said exterior metal panel on said automobile;

said attachment portion surface including a first surface portion for adhering a double surface adhesive sheet thereto and a second surface portion adjacent said first surface portion for applying a liquid bonding agent thereon;

both said double surface adhesive sheet and said liquid bonding agent adapted to engage said automobile panel when said molding strip is pressed thereagainst;

whereby said molding strip is attached to said automobile panel by said adhesive sheet and is held in position thereby while said liquid bonding agent solidifies.

7. A method of securing an elongated molding strip to an exterior metal panel of an automobile comprising the steps of:

providing a plurality of retainer members each including a body having a surface adapted to confront a surface of said automobile panel at spaced locations along said molding strip;

providing a double surface adhesive sheet on a first surface portion of said body surface;

applying a liquid bonding agent to a second surface portion of said body surface adjacent said first surface portion;

pressing said molding strip in place on said automobile panel by causing said adhesive sheets and said liquid bonding agent to engage said panel:

and allowing said liquid bonding agent to solidify while said adhesive sheets hold said molding strip in place on said panel.

4,328,053

APPARATUS AND METHOD FOR RETREADING TIRES

Henry C. Medlin, Jr., 485 Union St. South, Concord, N.C. 28025

Filed Aug. 27, 1980, Ser. No. 181,779

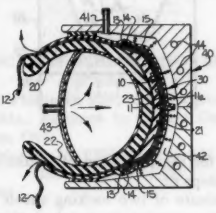
Int. Cl.³ B29H *17/36*

U.S. Cl. 156—96 **7 Claims**

6. In a method of retreading tires with a continuous precured and premolded tread strip in a curing chamber and wherein the tread strip is placed in overlying intimate contact with the surface of a tire casing with a bonding material therebetween to effect the desired bonding of the tread strip to the tire casing and wherein a flexible air impervious annular envelope is placed in overlying pressure exerting relation to the tread strip and surrounds the same for aiding in holding the same in intimate contact with the tire casing until the bonding material therebetween has been sufficiently heated to effect the desired

bonding of the tread strip to the tire casing, the improvement therewith of

wicking away and removing substantially all air initially entrapped underneath the annular envelope between the interior surface of the envelope and the peripheral face of the tread strip as well as substantially all air initially entrapped between the tread strip and the tire casing and, said improvement comprising providing an air porous elongate band of drapable fabric of a length greater than the circumference of the tire and with a pair of spaced apart air porous tapes connected to the band and extending substantially throughout the length of the band along the inner surface thereof and with pairs of opposing air porous straps extending laterally from opposite sides thereof, positioning the band of fabric with that area of the band therebetween said pair of tapes in intimate engagement with the tread strip throughout the entire periphery of the tread strip prior to positioning the air impervious annular envelope around the tread strip and while positioning the band substantially centrally of the tread strip with the ends of the band arranged in overlapping relation and with opposing side portions of the band extending along side portions of the tread strip and with said pair of tapes overlying the bonding material along opposite side portions of the tire casing for thus serving to protectively shield the band from intimate contact with the bonding material and with the straps extending substantially radially along the sides of the tire casing and beyond the opposite side portions of the overlying envelope whereby any air that might initially be entrapped beneath the air impervious envelope may quickly be wicked away outwardly beyond the confines of the envelope by the underlying band of air porous fabric and straps.



4,328,054

SPLICING APPARATUS

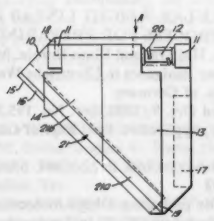
Stephen Collins, 5 Templar St., London, England

Filed Aug. 18, 1980, Ser. No. 179,175

Claims priority, application United Kingdom, Aug. 23, 1979, 29477/79; May 29, 1980, 17656/80

Int. Cl.³ B31F *5/06;* G03D *15/04*

U.S. Cl. 156—159 **11 Claims**



2. An apparatus for joining together strip materials comprising a support and two pivotally mounted cutting plates carried by said support having cooperating cutting edges, said plates having aligned grooves formed respectively therein transversely of the cutting edges of said plates for reception of the strip material to be joined, whereby in use the strip to be cut is placed in the groove of one plate, relative movement is effected between the two plates to cut the strip at a first position to produce two cut ends, a first cut end is retained in the groove of said one plate and moved relative to the other plate in a direction to bring said first cut end out of alignment with the groove of the other plate, the second cut end is placed in the groove of the other plate, relative movement between the two plates is again effected to cut the strip material at a second position and to bring the ends of the strip material remaining in the grooves into abutting disposition for application of an adhesive joining strip.

4,328,055

GUT

Masaaki Nakamura, and Hisaaki Ueba, both of Mibu, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Kureha Gosen Kabushiki Kaisha, Tochigi, both of, Japan

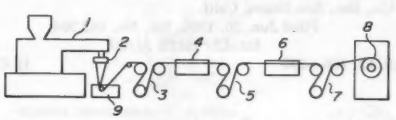
Division of Ser. No. 57,816, Jul. 16, 1979, Pat. No. 4,300,343.

This application Jan. 21, 1980, Ser. No. 113,451

Claims priority, application Japan, Jul. 27, 1978, 53-90964

Int. Cl.³ D04H *3/16*

U.S. Cl. 156—167 **6 Claims**



1. A method of preparing a gut comprising: melt spinning thermoplastic resin(s) selected from the group consisting of fluorocarbon resin such as polyvinylidene fluoride resin, polyamide resin and a polyester resin into a plurality of monofilaments in the number of from 5 to 100 by means of a melt spinning machine provided with a rotary spinning nozzle having 5 to 100 holes for a spinning jet and

collectively twisting said plurality of monofilaments by rotating the rotary spinning nozzle while the monofilaments are maintained at a temperature at least higher than the softening point of said resin(s), thereby obtaining a gut having a structure consisting of a strong, higher density, mutually melt-adhered nuclear part and a spiral, peripheral part of melt-adhered monofilaments.

4,328,056

METHOD OF MAKING A CUFFED TUBE

Gregory L. Snooks, Creve Coeur, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

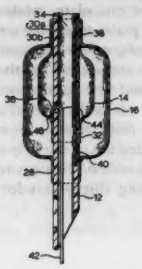
Filed Jul. 9, 1980, Ser. No. 167,073

Int. Cl.³ A61M *25/00;* B29B *11/00;* B29D *23/04*

U.S. Cl. 156—242 **20 Claims**

1. A method of making a medical double-cuffed retention tube for insertion and retention in a body cavity comprising the steps of providing a tube having a main lumen therethrough and auxiliary lumen means, forming a pair of inflatable cuffs integrally connected together, inserting one of the cuffs into the other of the cuffs including turning one of the cuffs inside-

out, placing the cuffs onto the tube including connecting them respectively in fluid communication with said main lumen and



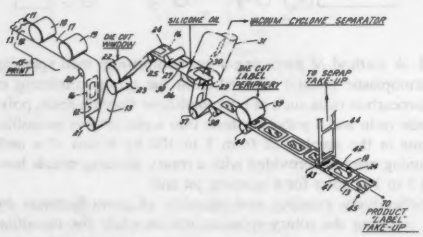
said auxiliary lumen means, and sealingly securing both ends of the cuffs to the outer surface of the tube.

4,328,057

METHOD AND APPARATUS FOR FORMING WINDOWED PRESSURE SENSITIVE LABELS

Bernard S. Gutow, San Carlos, Calif., assignor to H. S. Crocker Co., Inc., San Bruno, Calif.

Filed Jun. 26, 1980, Ser. No. 163,304
Int. Cl.[3] B32B *31/00*
U.S. Cl. 156—248 18 Claims



1. A method of making pressure sensitive, windowed labels from a label web which is removably adhered by a pressure sensitive adhesive to a backing web, and wherein said label web is cut to provide a series of discrete separable labels while carried on said backing web, said method comprising the steps of,

forming at least one window in each respective label but without cutting through the backing web underlying it, thereby defining a series of separate, removable, pressure sensitive adhesive coated slugs adhered on the backing web within the areas of the windows, and

removing each slug from the backing web underlying it through use of take-off equipment but without removing any said labels from said backing web,

while treating said slugs and said take-off equipment with a fluent adhesive deadening substance to lessen the adhesive characteristics of said pressure sensitive adhesive, thereby reducing clogging of said take-off equipment with said slugs after said slugs have been removed from said backing web,

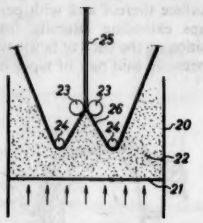
the slug being formed and removed from the backing web before the respective label is defined on the web by cutting around the exterior perimeter of that label.

4,328,058

TACK SPUN MATERIALS

Alfred E. Lauchenauer, Horn, Switzerland, assignor to Raduner & Co. A.G., Horn, Switzerland

Continuation of Ser. No. 44,887, Jun. 4, 1979, abandoned, which is a division of Ser. No. 875,030, Feb. 3, 1978, Pat. No. 4,235,946. This application Jun. 26, 1980, Ser. No. 163,116
Claims priority, application United Kingdom, Feb. 4, 1977, 774779; Jan. 23, 1978, 782594
Int. Cl.[3] B32B *31/18, 5/02*
U.S. Cl. 156—254 8 Claims



1. A method for the formation of a fusible sheet material comprising the steps of:

forming a laminate of two backing sheets with a layer of thermoplastic material sandwiched therebetween, said thermoplastic material of the type capable of being rendered tacky reversibly and serving to bond said backing sheets together;

determining an amount of heat to raise said laminate to an elevated temperature at which it is observed the bonding strength between said backing sheets is decreasec by at least 50% and said thermoplastic material layer assumes a tacky condition;

heating said laminate to said determined elevated temperature at which the bonding strength between said backing sheets is decreased by at least 50% and said thermoplastic material layer assumes a tacky condition;

separating said backing sheets while maintaining said thermoplastic material layer at said elevated temperature whereby a portion of said thermoplastic material layer adheres to each of said backing sheets;

applying a cooling agent to the fibrous filaments formed on the surface of the portion of the thermoplastic material layer adhering to each of said backing sheets after said separating step; and

selecting an angle of separation, degree of cooling and rate of separation for said backing sheets such that the average solidifying length of the fibrous structures formed by the tackified thermoplastic material between the diverging sheets is substantially twice the average length of the fibrous structure on the individual backing sheets.

4,328,059

HIGH-MOLECULAR WEIGHT LINEAR POLYESTERS AND A PROCESS FOR PREPARING THEM

Gernot Horlbeck, Haltern, and Klaus Burzin, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Oct. 9, 1980, Ser. No. 195,538
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945729
Int. Cl.[3] B05D *3/00;* C08K *3/22;* C08L *67/02;* C09J *3/16*
U.S. Cl. 156—332 8 Claims

1. A process for preparing a high-molecular weight, linear copolyester by condensing 40–85 molar percent of terephthalic acid optionally in the form of a dialkyl ester, half of which component can optionally be replaced by another dicarboxylic acid also optionally in the dialkyl ester form, and 60–15 molar percent of adipic acid, with an alkanediol of 2–6 carbon atoms

in its carbon chain, at an elevated temperature in the presence of a conventional catalyst, in a first condensation stage which is an interesterification or esterification stage and a second condensation stage which is a polycondensation stage, whereby a copolyester melt is produced, which comprises, before or during the first condensation stage, adding 0.005–0.1 molar percent, based on the total acid component, of a C_{6-10}-aryl or C_{7-20}-alkaryl ester of phosphorous acid or of phosphoric acid to the reaction mixture; and, after termination of the second condensation stage, adding 0.01–0.2 molar percent, based on the total acid component, of hypophosphorous acid to the finished copolyester melt.

6. A high molecular weight copolyester prepared by the process of claim 1.

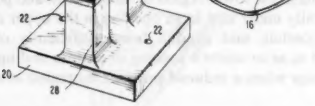
7. A method of adhering materials using a hot melt adhesive which comprises adhering materials with a hot melt adhesive which is a high molecular weight copolyester of claim 6.

4,328,060

OPHTHALMIC LENS DEBLOCKING - METHOD AND APPARATUS

Joseph Tusinski; Phillip D. Hill, and Clarence J. Lund, all of Muskogee, Okla., assignors to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Aug. 26, 1980, Ser. No. 181,523
Int. Cl.[3] B32B *1/00*
U.S. Cl. 156—344 **12 Claims**



1. An apparatus for removing a lens block releasably adhered to the surface of an ophthalmic lens comprising:

a base,

a first stanchion upwardly extending from said base;

a second stanchion upwardly extending from said base in a posture adjacent to but spaced from said first stanchion;

first gripping means fashioned at a distal end of said first stanchion for engaging one lateral surface of an ophthalmic lens block;

second gripping means fashioned at a distal end of said second stanchion in an operative posture opposing said first gripping means for engaging a generally opposite lateral surface of the ophthalmic lens block, wherein an operator may place the block portion of an ophthalmic lens and block between said mutually opposing first and second gripping means and remove the lens from the block by pivoting and peeling the lens away from the block using said first gripping means as a fulcrum while said second gripping means maintains the block between said first and second gripping means.

4,328,061

APPARATUS FOR DEPOSITING ADHESIVE STRIPS

Joseph W. A. Off, Irving; Judson H. Early, Dallas, and William B. Greer, Grand Prairie, all of Tex., assignors to Haggar Company, Dallas, Tex.

Division of Ser. No. 845,450, Oct. 25, 1977, Pat. No. 4,214,933. This application Oct. 26, 1979, Ser. No. 88,557
Int. Cl.[3] B26D *5/26;* B32B *31/00;* B65H *25/32*
U.S. Cl. 156—353 **41 Claims**

9. Apparatus for depositing adhesive strips on a length or piece of material, which comprises:

a frame mounted for rotation with respect to the material;

a feed pulley rotatably supported on the frame for receiving and transporting a ribbon along a predetermined input path including a portion of the pulley periphery;

said ribbon including a layer of adhesive and a layer of backing material on one side of the adhesive;

means for measuring the length of ribbon directed along the input path and for selectively operating the feed pulley to advance predetermined lengths of ribbon;

a revolving wheel rotatably supported on the frame and interconnected with the feed pulley for rotation in unison;

said wheel receiving the ribbon from the feed pulley and transporting said ribbon along a predetermined output path including a portion of the periphery of the wheel and into engagement with the adjacent material to deposit predetermined lengths of ribbon thereon;

structure for guiding the ribbon between the feed pulley and the wheel;

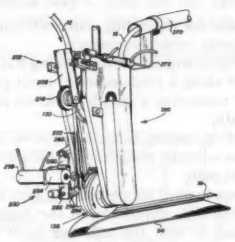
a rotary milling cutter mounted for displacement across the input path to provide separations in the adhesive layer only of the ribbon between successive adhesive strips; and

means responsive to the measuring means to selectively cause said cutter to traverse the ribbon forming adhesive strips having predetermined lengths.

14. An applicator for depositing adhesive on a piece of material, comprising:

a frame disposed above said material;

an applicating wheel rotatably supported on said frame and engagable with said material in rolling relation therealong;



reception means associated with said frame for receiving and guiding an adhesive bearing ribbon along a predetermined input path to the periphery of said wheel for interengagement between said wheel and said material during said rolling therealong to deposit adhesive on said material;

said frame being rotatable about a generally vertical axis, and said wheel rotating about a generally horizontal axis substantially parallel to the general plane of said material therebelow, whereby said applicator is steerable with respect to said material to selectively provide a variably directed adhesive deposition path;

said adhesive being thermally activated;

activating means comprising heating means heating the periphery of said applicating wheel for activating said adhesive for adhesion to said material, said heating means being mounted within said applicating wheel;

said heating means comprising electrical resistance means and said activating means comprising commutation means including frame mounted brush means engaging wheel mounted brush means connected to said resistance means;

said applicating wheel being rotatably mounted to said frame by a hollow shaft having an opening through a side wall thereof, said wheel mounted brush means being secured to said shaft, said activating means including means connected to terminals of said electrical resistance means and extending into said shaft through said opening to said last mentioned brush means; and

said heating means comprising a circular heating band enclosing said electrical resistance means and secured within

said applicator wheel by a clamp ring, and an insulator plate and insulating disk sandwiching therebetween said heating band and said clamp ring, said plate and said disk being comprised of insulative material to prevent undesirably high temperatures in components other than desired applicator portions, and a pair of hubs mounted to said shaft and between which are secured said plate and disk, said shaft being rotatably mounted at its ends to said frame.

4,328,062

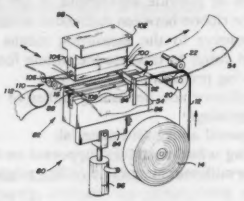
APPARATUS FOR DEPOSITING ADHESIVE STRIPS

Joseph W. A. Off, Irving; Judson H. Early, Dallas, and William B. Greer, Grand Prairie, all of Tex., assignors to Haggar Company, Dallas, Tex.

Division of Ser. No. 845,450, Oct. 25, 1977, Pat. No. 4,214,933. This application Oct. 29, 1979, Ser. No. 88,558

Int. Cl.³ B26D *5/26;* **B30B** *15/34;* **B32B** *31/00*

U.S. Cl. 156—353 **12 Claims**



1. Apparatus for depositing adhesive strips on a length or piece of material, which comprises:

means for directing a ribbon including a layer of activatable adhesive along a predetermined input path;

means for measuring a length of ribbon directed along the input path;

said directing means being responsive to the measuring means to advance predetermined lengths of ribbon along the input path;

cutter means located along the input path beyond the directing means and responsive to the measuring means for separating at least the adhesive layer of the ribbon to provide adhesive strips having predetermined lengths;

means located along the input path beyond the cutter means having a stationary portion defining a guide surface having a slot formed therethrough and structure extending from opposite edges of the guide surface to define opposed grooves for positioning the ribbon adjacent the material onto which the adhesive is to be deposited;

means located along the input path having a movable portion movable between retracted and extended positions, the movable portion in the extended position extending through the slot in the stationary portion for selectively engaging the adhesive ribbon and the material to deposit the strip of adhesive onto the material responsive to the measuring means;

means for activating the adhesive during engagement between the ribbon material to attach the adhesive strip to the material; and

wherein the cutter means comprises fixed and movable knife blades disposed on opposite sides of the input path, said movable blade being actuated concurrently with the engaging means to shear the adhesive ribbon.

4,328,063

AUTOMATIC FRUIT LABELER

James E. Ingalls, 400 2nd Ave. NE., St. Petersburg, Fla. 33701

Filed Mar. 2, 1981, Ser. No. 239,412

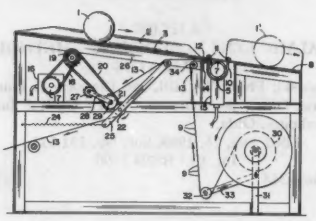
Int. Cl.³ B32B *31/00*

U.S. Cl. 156—361 **4 Claims**

1. In a machine for applying labels to individual pieces of round or oval fruit from a movable belt carrying a supply of said labels spaced individually from each other, the improvement comprising the combination of:

a. a bar so shaped and positioned as to provide a sharp reversal in path as said movable belt passes against the underside and then the upper side of said bar so as to provide a sharp reversal of path of said belt thereby effecting extension and peeling of said individual labels with an adhesive side facing upward;

b. a conduit positioned adjacent to said bar where said sharp reversal in path of said movable belt is effected, said conduit being positioned so that as said individual labels are extended from said belt they will be extended and moved to a position over a certain upper area of said conduit, said conduit having in said area over which said labels are individually positioned a plurality of openings comprising one opening large enough for a beam of light to pass



through and said opening being surrounded by a number of smaller openings, and said conduit having a still larger opening in the lower region of said conduit and positioned vertically under said large opening in the upper region of said conduit, said conduit being sufficiently otherwise sealed so as to create a sucking of air into said upper area openings when a reduced pressure is created in said conduit;

c. an electric eye component extending upward through said opening in the lower portion of said conduit, being tightly sealed against the edge of said opening, and adapted to sense the absence of a label positioned above said upper area openings of said conduit and thereby to actuate movement of said movable belt to position a label over said upper area openings; and

d. A means for creating a reduced pressure in said conduit.

4,328,064

APPARATUS FOR SHINGLING TICKETS

Rex B. Miller, Jr., 4595 Janice Dr., Atlanta, Ga. 30337, and Manfred Rudy, 4461 Lambert Dr., Kennesaw, Ga. 30144

Filed Mar. 31, 1980, Ser. No. 135,526

Int. Cl.³ B32B *31/04*

U.S. Cl. 156—558 **22 Claims**

1. An apparatus for forming a bank of tickets from a supply of tickets, comprising:

(a) a frame;

(b) means on said frame for stacking said supply of tickets in an upstanding, juxtaposed orientation;

(c) means on said frame for sequentially stripping the bottommost of said tickets from said supply of said tickets;

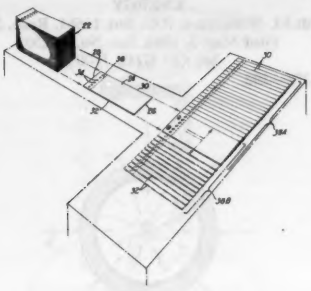
(d) means on said frame for mating a selected number of the stripped tickets in adhesive cooperation, said mating means being remote from said stripping means;

(e) means on said frame for transferring said stripped tickets from said stripping means to said mating means; and

(f) power means for said stripping means, mating means and said transferring means,

wherein said stripped tickets are transferred from said stripping means to said mating means along a first direction and further including means on said frame for advancing away from said

mating means in a second direction said selected number of stripped tickets mated in adhesive cooperation, said second



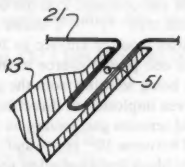
direction being transverse to said first direction, said advancing means operatively connected to said power means.

4,328,065

EXTRACTOR PIN

David W. Kincheloe, West Chicago, and David O. Neathery, Wheaton, both of Ill., assignors to King Instrument Corporation, Westboro, Mass.

Filed May 16, 1980, Ser. No. 150,595
Int. Cl.[3] B65H *21/00*
U.S. Cl. 156—502 17 Claims



1. In a cassette tape loader for loading tape into a cassette having a tape leader, said loader having a tape loading station and a tape splicing station, the improvement comprising tape extractor means movably mounted for movement into relationship with said tape loading station and said tape splicing station for extracting a tape leader from a cassette at the tape loading station and carrying the tape leader to the tape splicing station, said tape extractor means comprising means for vacuum sucking the tape leader from the cassette and means for thereafter mechanically holding the sucked tape leader during movement of the tape extractor means to the splicing station.

4,328,066

TAPE SPLICING APPARATUS

Seiji Kiuchi, and Shoji Imai, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 3, 1980, Ser. No. 165,811
Claims priority, application Japan, Jul. 5, 1979, 54-85398
Int. Cl.[3] B31F *5/00;* B65H *21/00*
U.S. Cl. 156—506 19 Claims

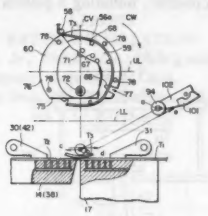
1. A tape splicing apparatus comprising:

a drum body for feeding splicing tape toward the ends of first and second tapes to be butt-joined with said splicing tape and having means for retaining a non-adhesive surface of said splicing tape on the circumferential wall of said drum body;

driving means for turning said drum body intermittently in one direction;

a tape cutting knife for cutting said splicing tape on the circumferential wall of said drum body in the widthwise direction of said splicing tape into segments of splicing tape having a predetermined length;

means for depressing a part of the adhesive surface of a segment of splicing tape against the butt-joint of said first and second tape with said drum body; and



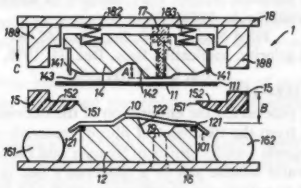
depressing roller means for bonding the entire adhesive surface of said segment of splicing tape to said first and second tapes while preventing the formation of air bubbles between said tapes thus bonded.

4,328,067

LAMINATING METHOD AND APPARATUS

Franco Cesano, Pinerolo, Italy, assignor to G.O.R. Applicazioni Speciali S.p.A., Turin, Italy

Division of Ser. No. 52,106, Jun. 26, 1979, Pat. No. 4,243,456.
This application May 6, 1980, Ser. No. 147,223
Claims priority, application Switzerland, Jun. 28, 1978, 7027/78
Int. Cl.[3] B32B *31/00;* A01J *21/02;* A21C *3/00;* B26D *1/02*
U.S. Cl. 156—511 4 Claims



1. In a molding press for laminatingly connecting a substrate layer and a coating layer; said press comprising an upper mold member and a lower mold member, each of said mold members having a molding surface and said mold members being movable in a reciprocating manner between an opened position and a closed molding position; the improvement consisting of providing a movable member having (A) a cutting edge capable of forming a first cutting means with a shearing edge of said lower mold member and (B) a surface portion capable of forming a second cutting means with a cutting member on said upper mold member; said second cutting means being arranged peripherally distanced from said first cutting means to provide for cutting of said substrate layer while leaving overlapping free edge portions of said coating layer.

4,328,068

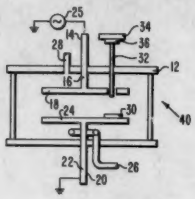
METHOD FOR END POINT DETECTION IN A PLASMA ETCHING PROCESS

Bernard J. Curtis, Gattikon, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Jul. 22, 1980, Ser. No. 171,271
Int. Cl.[3] B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—626 1 Claim

1. In a method for measuring the end point of a plasma etching process comprising mounting a light pipe in the wall of

a plasma chamber, which light pipe extends from outside to within the chamber, positioning a substrate having a coating thereon, a portion of which is to be removed by plasma etching, in the chamber, positioning a light detector and a wavelength bandpass filter so as to detect light of a certain wavelength passing through the light pipe, flowing a reactive gas into the plasma chamber, initiating a plasma discharge in the



reactive gas, monitoring the intensity of the light passing through the light pipe until the intensity stabilizes, and terminating the plasma discharge; the improvement comprising positioning the end of the light pipe within the chamber so that light of said wavelength emitted by a chemical species present in the plasma discharge is reflected from the coated surface of the substrate before passing into the end of the light pipe.

4,328,069

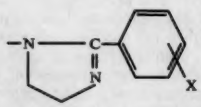
PROCESS FOR THE ELIMINATION OF THE RESIDUAL FLUORESCENCE RESULTING FROM OPTICAL BLEACHING AGENTS

Giuseppe Raspanti, Mozzo, Italy, assignor to Apital Produzioni Industriali S.p.A., Milan, Italy

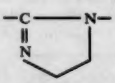
Filed May 1, 1980, Ser. No. 145,489
Claims priority, application Italy, Dec. 21, 1979, 28326 A/79
Int. Cl.³ D21H *3/58*
U.S. Cl. 162—162 **6 Claims**

1. The process for the elimination of the fluorescence effect resulting from the treatment of fibrous materials with optical anionic agents which consists of treating said fibrous materials with a water soluble salt or a quaternary salt in an amount sufficient to nullify said fluorescence effect of a polymer containing the imidazoline ring of Formula (I)

(I)



wherein X is in position meta or para with respect to the imidazoline ring and X is



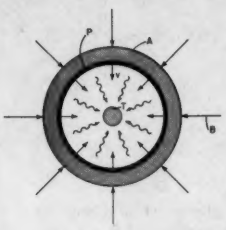
or —CO—NH— said polymer being prepared by reacting at least 1.5 moles of diethylenetriamine or triethylenetetramine with 1 mole of terephthalic or isophthalic acid or one of their functional derivatives, whereby an amide is obtained, cyclizing said amide to obtain a monomer containing said imidazoline ring, reacting said monomer with dicyandiamide to obtain a polymer followed by salt formation with a strong acid or quaternization with an alkylating agent.

4,328,070

METHOD FOR THE INITIATION OF FUSION REACTIONS FOR THE CONTROLLED RELEASE OF ENERGY

Friedwardt M. Winterberg, P.O. Box 11661, Reno, Nev. 89510

Filed Mar. 3, 1980, Ser. No. 126,332
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—102 **8 Claims**



1. A method for the achievement of fusion energy release by inertial confinement comprising:

(a) positioning a target within a cavity filled with a tenuous gas, the atomic weight A of the gas being given by

$$T = \frac{A}{3R(Z+1)} V^2$$

where R is the gas constant, Z is the degree of ionization given by $Z = 6.6 \times 10^{-3} T^{0.41}$, T varies from 5×10^6 °K. to 10^7 °K., V varies from 20 km/sec to 200 km/sec;

(b) using at least one power source to implode said cavity, the implosion being selected from the group consisting of ablatively driven implosion or direct high velocity impact implosion, said tenuous gas, having an initial atomic number density of between 10^{18} cm^{-3} and 10^{21} cm^{-3}, becoming a source of black body radiation upon the high implosion velocity (V);

(c) confining, compressing and thereby amplifying the black body radiation;

(d) ablatively imploding the target positioned inside said cavity by means of black body radiation absorbed on the surface of said target.

4,328,071

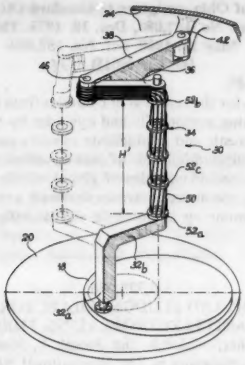
DEVICE FOR GUIDING DUCTS WHICH EXTEND THROUGH A ROTATABLE COMPONENT

Maurice Moulin, Palaiseau, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 17, 1980, Ser. No. 112,931
Claims priority, application France, Jan. 18, 1979, 79 01264
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—245 **16 Claims**

1. A device for guiding ducts between a point of a component which is capable of rotational motion about a vertical axis and a fixed point located externally of said component, wherein said device comprises means for supporting the ducts between said fixed point located on the axis of rotation of said movable component and does not rotate with the latter, and means for guiding ducts between the second point and a third point located on the axis of rotation of said movable component and rotating with the latter, said third point being located at a given distance of said second point, said guiding means being adapted to maintain the ducts in uniformly spaced relation on a surface of revolution about the axis of rotation of said movable component whatever the rotation of the third point relative to the second point and to ensure uniform distribution

of this rotation on said distance between the second and third point, so that the ducts form a bundle type assembly in said



guiding means, said device further comprising means for securing the third point to said movable component.

4,328,072

METHOD TO DRY QUENCH COKE

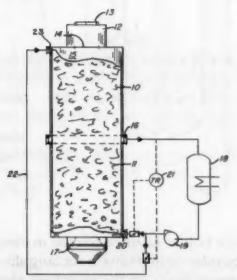
Erich Pries, and Heinz Thubeauville, both of Bochum, Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,161

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853299

Int. Cl.[3] C10B *39/02, 45/00*

U.S. Cl. 201—1 4 Claims



1. A process for the continuous dry quenching of coke in a vertical chamber by an inert gas which is fed through the coke and through a heat exchanger in a circuit, the vertical chamber defining a prechamber for hot coke located below a charging opening and a quenching chamber for quenching hot coke below the prechamber, the lower end of said vertical chamber having a gas inlet line and a coke discharger, a quenching gas discharge flue between the prechamber and the quenching chamber and a gas duct communicating with the upper part of said prechamber, said process including the steps of circulating inert gas normally only between said heat exchanger and said quenching chamber during which said inert gas in said quenching gas discharge flue defines an undisturbed quench gas steady-state temperature of operation, feeding a stream of inert gas in the event that the discharge of coke is interrupted through the coke in said prechamber for thermal exchange, varying the withdrawal of inert gas heated by the coke in the quenching chamber and the prechamber such that the temperature of a mixture of the withdrawn inert gas from the prechamber and the quenching chamber is at said undisturbed quench gas temperature, and continuing withdrawal of inert gas from said quenching chamber and prechamber as long as said temperature of a mixture is still attainable at said undisturbed quench gas temperature.

4,328,073

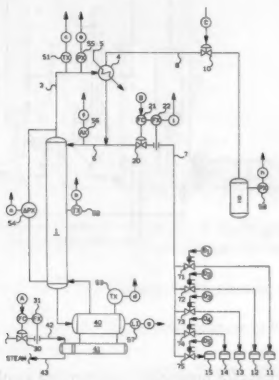
BATCH DISTILLATION

Merle R. Likins, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 29, 1980, Ser. No. 221,122

Int. Cl.[3] B01D *3/42*

U.S. Cl. 203—2 17 Claims



1. Batch distillation process for recovering a portion of a kettle feed material in the form of one or more product streams from the overhead of a distillation column, said process comprising

(a) a start-up operation including the steps of providing a computer means and manipulating said computer means for

(aa) automatically heating a kettle of a distillation column,

(bb) automatically maintaining the overhead effluent line of said distillation column closed

(cc) automatically determining at least one distillation process parameter and generating a start-up signal responsive thereto,

(dd) automatically comparing said start-up signal with a start-up setpoint,

(b) a production operation including the steps of providing a computer means and manipulating said computer means for

(aa) automatically generating a production signal when said start-up signal has reached said start-up setpoint,

(bb) automatically opening said overhead effluent line responsive to said production signal,

(cc) automatically directing at least a portion of said overhead effluent from said distillation column to a selected receptacle,

(dd) automatically operating the distillation column such as to recover one or more separate product streams from said overhead effluent line, at least one of said separate product streams being a composition controlled main product stream

(ee) automatically determining at least one operational parameter and generating a shut-down signal responsive thereto,

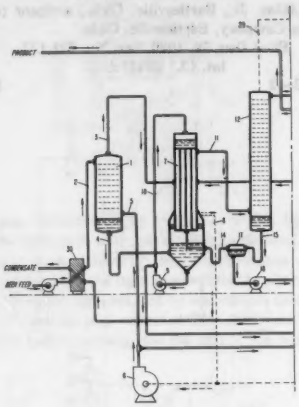
(c) a shut-down operation comprising automatically shutting down the distillation column when said shut-down signal has reached a given shut-down setpoint.

4,328,074

PRODUCTION OF CONCENTRATED ALCOHOL AND DISTILLERY SLOP

Ferris C. Standiford, Greenbank, Wash., assignor to Resources Conservation Company, Seattle, Wash.

Filed Nov. 12, 1980, Ser. No. 206,170
Int. Cl.[3] B01D *1/28, 3/16*
U.S. Cl. 203—19 7 Claims



1. A process for producing concentrated alcohol and distillery slop from fermented beer with a reduced amount of energy comprising:

(a) feeding said beer to a beer still;

(b) feeding a portion of a water vapor derived from step (e) hereinbelow, to said still;

(c) withdrawing an alcohol-rich vapor as the overhead from said still;

(d) withdrawing an alcohol-poor distillery slop as the bottom stream from said still;

(e) passing said slop from said still to an evaporator to concentrate said slop by evaporating water vapor therefrom;

(f) passing said vapor from said overhead of said still to said evaporator into indirect heat exchange contact with said slop to condense a portion of said vapor and form a condensate;

(g) passing said condensate from said evaporator to a condensate stripper and withdrawing an alcohol-rich stream as the overhead from said stripper and an alcohol-poor stream as the bottom stream from said stripper;

(h) feeding a portion of said water vapor derived from step (e) hereinabove to said stripper;

(i) passing the uncondensed vapor from the evaporator to a rectifier to supply substantially all the sensible heat of said vapor to said rectifier and withdrawing concentrated alcohol as the overhead from said rectifier and an alcohol-containing mixture as the bottom stream from said rectifier;

(j) passing said alcohol-containing mixture from said rectifier to said stripper for admixture with said condensate from the evaporator;

(k) passing at least a portion of at least one of said water vapor from said evaporator and said vapor from said still to a compressor to form a compressed vapor, the energy supplied to said compressor constituting a primary source of energy to said process; and

(l) withdrawing said concentrated slop from said evaporator.

4,328,075

REMOVAL OF CYANIDES FROM ACETONITRILE

William O. Fitzgibbons, Hudson, and Andrew J. Barko, Lakewood, both of Ohio, assignors to Standard Oil Company

Division of Ser. No. 102,088, Dec. 10, 1979. This application May 21, 1980, Ser. No. 152,006
Int. Cl.[3] B01D *3/34*
U.S. Cl. 203—37 11 Claims

1. A process for the removal of cyanides from a first aqueous stream containing acetonitrile and cyanides by the steps of:

(a) adding caustic and an aldehyde to said aqueous stream to complex substantially all of said cyanides to form a degradable cyanide complex of glycolonitrile; and

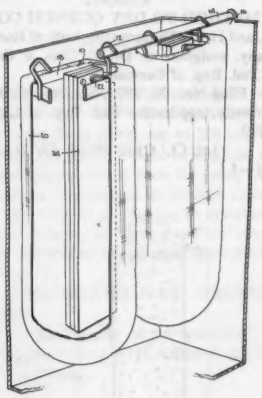
(b) distilling said aqueous stream to obtain a second aqueous stream containing acetonitrile substantially free of cyanides.

4,328,076

ELECTRODE AND SLUDGE COLLECTOR SUPPORT DEVICE AND ELECTROPLATING THEREWITH

Gordon L. Fisher, Mahwah, and Joseph V. Makely, Ramsey, both of N.J., assignors to The International Nickel Co., Inc., New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,628
Int. Cl.[3] C25D *17/12*
U.S. Cl. 204—14 R 8 Claims



1. An electrode holder adapted for use in electroplating with metal strip electrodes comprising a rectangular frame adapted to suspend an anode bag from the periphery thereof, a substantially horizontal current conducting bar adapted in use to suspend metal strip electrodes therefrom and to convey current to said electrodes, a suspending hook electrically connected to said current conducting bar, said bar being supported by said frame, said frame having in horizontal plane a lateral portion dimensioned to permit vertical passage of said strip electrodes thereinto, said strip electrodes having means in the upper portion thereof to engage said current conducting bar, whereby exhausted strip electrodes can be removed from said holder and new strip electrodes added without disturbing said holder or said anode bag.

8. An electroplating process comprising using as the anode an assembly of metal strip electrodes and a holder therefor, said holder comprising a rectangular frame adapted to suspend an anode bag from the periphery thereof, substantially horizontal current conducting means to convey current to said strip electrodes, and a suspending hook electrically connected to said current conducting means, with said frame supporting said current conducting means, said frame having in horizontal plane a lateral portion dimensioned to permit vertical passage of said strip electrodes thereinto, said strip electrodes having

means in the top portion thereof adapted to engage said current conducting means, whereby exhausted strip electrodes may be removed from said holder and new electrodes added without disturbing said holder or said anode bag.

4,328,077

METHOD FOR REFORMING A USED TUBULAR MOLD FOR CONTINUOUS CASTING

Diethelm Mettler, Küsnacht, Switzerland, assignor to Accumold AG, Fischenthal, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,170

Claims priority, application Switzerland, Nov. 7, 1979, 9966/79

Int. Cl.³ C25D 7/04, 5/34

U.S. Cl. 204—26 4 Claims

1. A method of rejuvenating a spent tubular mold for continuous casting, comprising the steps of:

grinding damaged locations of the inner surfaces of the tubular mold;

introducing abrasion material into the hollow mold compartment of the tubular mold following the grinding operation;

closing the opposed ends of the tubular mold;

moving the tubular mold and the abrasion material relative to one another so as to cause erosion of mold material at the inner surfaces of the mold; and

thereafter galvanically coating the inner surfaces of the tubular mold.

4,328,078

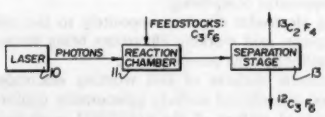
METHOD OF PRODUCING CARBON-13 BY MULTIPHOTON DECOMPOSITION OF C_3F_6

Peter A. Hackett, 2111 Montreal Rd; Wing S. Nip, 341 MacLaren, and Clive Willis, 151 Kamloops, all of Ottawa, Ontario, Canada

Filed Mar. 21, 1980, Ser. No. 132,656

Int. Cl.³ B01D 59/00

U.S. Cl. 204—158 R 2 Claims



1. A method of producing carbon-13 by multiphoton decomposition of C_3F_6, said material containing carbon-12 and carbon-13 isotopic species, comprising:

(a) irradiating gaseous C_3F_6 in a reaction chamber at a pressure below 10 Torr with a laser beam at a frequency in the range of 950 to 1020 wavenumbers and providing a minimum fluence of 1 joules per sq. cm. such as to optimize the excitation of one of the specified species relative to the other causing the following reactions to take place:

$$C_3F_6+nh\nu \rightarrow C_2F_4+CF_2$$

$$CF_2+CF_2 \rightarrow C_2F_4$$

(b) passing the material through a physical separation stage to obtain a $^{13}C_2F_4$ product.

4,328,079

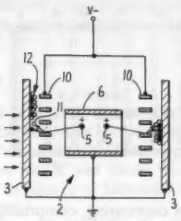
METHOD FOR PUMPING IMPURITIES, ESPECIALLY NOBLE GASES, FROM HYDROGEN OR MIXTURES OF HYDROGEN AND ITS ISOTOPES

Johann Hemmerich, Stetternich, Fed. Rep. of Germany, assignor to The Cyclotron Corporation, Berkeley, Calif.

Filed May 2, 1980, Ser. No. 146,071

Int. Cl.³ C23C 15/00; G21F 9/02

U.S. Cl. 204—192 SP 8 Claims



1. A method for selectively pumping impurities from hydrogen and mixtures of hydrogen and its isotopes, comprising the steps of:

confining a mixture of one or more of hydrogen and its isotopes and said impurities in an enclosure-defined evacuated zone;

ionizing a portion of the mixture in an electric discharge within the zone;

accelerating the ionized portion of the mixture to bombard a sputtering electrode;

removing the mixture that migrates to said enclosure by entrapment withir a film of dislodged electrode atoms formed upon said enclosure; and

permitting hydrogen and its isotopes to diffuse out of said film and to return into the evacuated zone.

4,328,080

METHOD OF MAKING A CATALYTIC ELECTRODE

Lawrence A. Harris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,509

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 EC 8 Claims

1. A method for producing a catalytic electrode consisting essentially of an electrical conductor and an adherent deposit of catalytic metal which consists essentially of providing a catalytic metal selected from the group consisting of platinum, palladium, nickel, rhodium and iridium, providing a supporting electrical conductor that forms a protective oxide on its surface, said electrical conductor being selected from the group consisting of silicon, titanium, tantalum, and niobium, sputter etching a predetermined surface of said conductor with ions of an inert gas for a time sufficient to remove oxide therefrom and to introduce disorder into the surface, thereby making it chemically reactive and thus adherent to said catalytic metal, and depositing said catalytic metal onto said etched surface of said conductor in a minimum thickness of about 10 Angstroms at least in at least a catalytic amount, said etching and deposition being carried out under a partial vacuum.

4,328,081

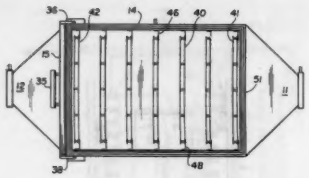
PLASMA DESMEARING APPARATUS AND METHOD

Fazal A. Fazlin, Saint Anthony Village, Minn., assignor to Micro-Plate, Inc., Clearwater, Fla.

Continuation of Ser. No. 124,468, Feb. 25, 1980, abandoned. This application Nov. 4, 1980, Ser. No. 204,329

Int. Cl.³ C23C *15/00*; C23F *1/00*

U.S. Cl. 204—192 E **28 Claims**



1. The method of desmearing, comprising the steps of:

providing a rectangular confinement for the flow of plasma gas excited by a radio frequency generator at very low pressure,

positioning pairs of electrodes in close spaced relationship to provide a primary field between the electrodes of each pair, one electrode of each pair being connected to the radio frequency source and the other to ground and spacing the pairs of such electrodes a sufficient distance apart to permit the insertion of objects to be desmeared in the secondary field between the adjacent pairs,

directing the flow of plasma to flow transverse to the electrodes through apertures contained within the electrodes and confined in the rectangular path to impact the objects to be desmeared,

the entirety of all the above steps being performed within the rectangular confinement at very low pressure.

4,328,082

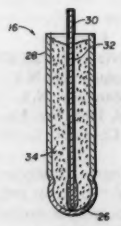
SOLID STATE ION-SENSITIVE ELECTRODE AND METHOD OF MAKING SAID ELECTRODE

Radhakrishna M. Neti, Brea, and John N. Harman, III, Placentia, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 26, 1980, Ser. No. 163,112

Int. Cl.³ G01N *27/36*

U.S. Cl. 204—195 G **11 Claims**



1. A method of fabricating an ion sensitive solid-state electrode which includes the steps of:

forming a hollow ion-sensitive glass member;

inserting an electrically conducting member into the interior of the glass member;

filling the interior of the glass member around the conducting member with an electrically conducting aqueous solution of an alkali halide and a sodium silicate compound; and

dehydrating the aqueous solution at an elevated temperature, thereby converting said solution into a solid anhydrous body which provides a continuous electrically conductive bridge between the glass member and the conducting member.

5. An ion-sensitive electrode comprising:

a hollow glass member having an end portion which is ion-sensitive and which is adapted to be immersed in a sample to be tested;

a conductive member which extends into the interior of the glass member and which is adapted to be connected to an electrical indicating device;

a solid, anhydrous electrically conductive body that is permanently adherent to the interior of the glass member and to the conductive member, said body being produced by:

(a) introducing into the glass member an aqueous solution of an alkali halide and a sodium silicate compound, and

(b) maintaining the solution-containing glass member at an elevated temperature to dehydrate said solution and convert the same to said solid, anhydrous body.

4,328,083

APPARATUS FOR MIRROR-FINISHING A CYLINDRICAL

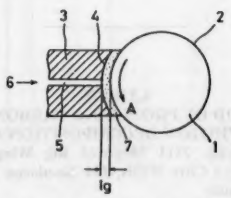
Yasuo Kimoto, Fujiidori; Katsunori Tamiya, Kobe; Shoichi Honda, Osaka; Hidehiko Machata, Toyonaka, and Hiroshi Kamada, Takatsuki, all of Japan, assignors to Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, Japan

Division of Ser. No. 123,648, Feb. 22, 1980, Pat. No. 4,294,673. This application Oct. 27, 1980, Ser. No. 201,335

Claims priority, application Japan, Feb. 24, 1979, 54-20919; Mar. 27, 1979, 54-36618; May 2, 1979, 54-55086; May 2, 1979, 54-55087; Aug. 15, 1979, 54-104313; Aug. 15, 1979, 54-104314; Aug. 15, 1979, 54-104315

Int. Cl.³ B23P *1/10, 1/12, 1/20*

U.S. Cl. 204—217 **6 Claims**



1. An apparatus for mirror-finishing a cylindrical workpiece, said workpiece being connected to the anode of a power supply, said apparatus comprising:

working electrodes disposed oppositely to the cylindrical workpiece, said working electrodes being connected to the cathode of the power supply,

the electrode surfaces of said working electrodes being formed into curved surfaces substantially conforming to the curved surface of the cylindrical workpiece being treated;

band-shape abrasive matters disposed between the surface of the workpiece to be treated and each of said electrode surfaces, the band-shape abrasive matters being in contact with the surface to be treated;

abrasive matter feed mechanism means for moving said band-shape abrasive matters with respect to the surface to be treated;

an electrolyte in the gap between each of said electrode surfaces and the surface to be treated, said electrolyte being in a passive state;

a swivelling mechanism for swivelling, in a circumferential direction, said working electrodes relative to the surface of the cylindrical workpiece to be treated; and

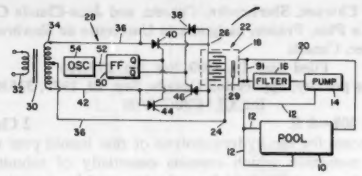
a moving mechanism for moving, in an axial direction, said working electrodes relative to the surface of the cylindrical workpiece to be treated.

4,328,084

APPARATUS FOR THE TREATMENT OF WATER

Herman A. Shindell, 1081 N. Shepard St., Anaheim, Calif. 92806

Division of Ser. No. 933,163, Aug. 14, 1978, Pat. No. 4,263,114.
This application Jan. 8, 1981, Ser. No. 223,357
Int. Cl.³ C25B 15/02
U.S. Cl. 204—228 7 Claims



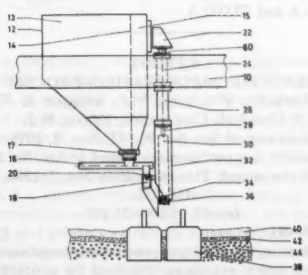
1. In an apparatus for destroying algae in pool water:
a flowpath for pool water;
a plurality of plates made of titanium metal and disposed in said flowpath and spaced such that pool water flows between said plates in pairs;
means for connecting said pairs of said plates to a source of electrical potential such that one plate of each pair is made electrically positive with respect to the other plate of each pair;
means for reversing the relative polarity of the plates of a pair;
a quantity of copper and a quantity of silver joined together to form an electrochemical junction and both disposed in said flowpath such that pool water is made to contact both the copper and the silver; and
means for preventing flow of pool water over said junction.

4,328,085

DEVICE FOR SERVICING ELECTROLYTIC CELLS

Hans Friedli; Edwin Gut, and Peter Aeschbach, all of Steg, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 5, 1980, Ser. No. 184,345
Claims priority, application Switzerland, Sep. 10, 1979, 8146/79
Int. Cl.³ C25C 3/14
U.S. Cl. 204—245 32 Claims



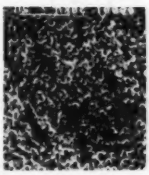
1. A device for point feeding alumina and additives to an electrolytic cell which comprises a support beam positioned above said electrolytic cell and a point feeding unit movably mounted on said support beam to a position freely selected along and across the entire surface area of said electrolytic cell, said point feeding unit being easily removed from said support beam and comprising:
a storage bunker having a material inlet for feeding said alumina and said additives to said storage bunker and a material outlet for removing said alumina and said additives from said storage bunker;
a run-out pipe downstream of said material outlet for feeding alumina and additives to said cell;
a dosing device positioned between said material outlet and said run-out pipe for feeding material to said run-out pipe; and
a crust breaking facility releasably secured to said storage bunker, said crust breaking facility comprising a pressure cylinder system, a chisel alignment housing mounted on said pressure cylinder system and a chisel movably mounted within said chisel housing between a first and a second position for breaking the crust on said electrolytic cell.

4,328,086

METHOD FOR THE MANUFACTURE OF ION-EXCHANGE MEMBRANE-CATALYTIC METAL COMPOSITE

Hiroyasu Takenaka, Ikeda, and Eiichi Torikai, Yao, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,627
Claims priority, application Japan, Oct. 30, 1979, 54-140739
Int. Cl.³ C25B 13/02
U.S. Cl. 204—296 8 Claims



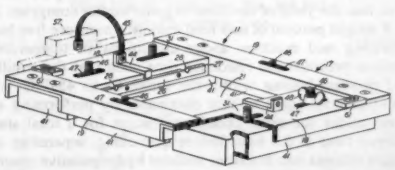
1. A method of manufacturing a compsite of an ion-exchange membrane and a catalytic metal by attaching a catalytic metal onto an ion-exchange membrane, which comprises the steps of treating the surface of the ion-exchange membrane with a low temperature gas plasma to thereby form micropores on the membrane surface, and then attaching the catalytic metal onto the ion-exchange membrane.

4,328,087

APPARATUS FOR TREATING PORTIONS OF ARTICLES IN A LIQUID

Francis S. Maschler, Kansas City, and Gary A. Seifert, Lee's Summit, both of Mo., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Nov. 21, 1980, Ser. No. 209,077
Int. Cl.³ C25D 17/06
U.S. Cl. 204—297 W 7 Claims



1. Apparatus for supporting at least one article with respect to the surface of a treating liquid which comprises:
a frame bounding a central opening through which said at least one article is mounted to extend with a predetermined portion thereof toward said liquid; and
a plurality of buoyancy chambers attached to the frame to become at least partially immersed into the liquid when the frame is placed onto the liquid, such that the frame

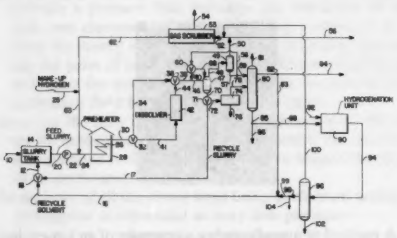
becomes supported with respect to the liquid by the combined buoyancy of said buoyancy chambers, the buoyancy chambers being slidingly attached for repositioning along the frame such that the center of buoyancy of said apparatus is laterally adjustable with respect to the center of gravity of the apparatus including said at least one article, whereby said buoyancy chambers can be repositioned along the frame to shift the chamber of buoyancy of said apparatus into vertical coincidence with the center of gravity of the apparatus and to orient the frame substantially parallel to the surface of the liquid such that said predetermined portion of said at least one article becomes immersed into said treating liquid.

4,328,088

CONTROLLED SHORT RESIDENCE TIME COAL LIQUEFACTION PROCESS

Raymond P. Anderson, Overland Park, Kans.; David K. Schmalzer, Englewood, Colo., and Charles H. Wright, Overland Park, Kans., assignors to The Pittsburg & Midway Coal Mining Co., Englewood, Colo.

Filed Sep. 9, 1980, Ser. No. 182,698
Int. Cl.³ C10G *1/00, 1/06*
U.S. Cl. 208—8 LE **26 Claims**



1. A process for producing a normally solid dissolved coal product and a distillate liquid product from a raw coal feed which comprises continuously passing a feed slurry comprising said raw coal and a recycle solvent oil together with hydrogen through a preheating-reaction zone, the hydrogen pressure in said preheating-reaction zone being at least 1500 psig, reacting said slurry in said preheating-reaction zone at a temperature in the range of between about 455° and about 500° C. to dissolve said coal to form normally liquid coal and normally solid dissolved coal, maintaining a total slurry residence time within said temperature range at a finite value in the range of above 0 to about 0.2 hour, continuously withdrawing reaction effluent, continuously and directly contacting said reaction effluent with a quenching fluid to substantially immediately reduce the temperature of said reaction effluent to a temperature which is sufficiently below 425° C. to substantially inhibit polymerization so that the yield of insoluble organic matter comprises less than 9 weight percent of said feed coal on a moisture free basis, performing said reaction under conditions of temperature, hydrogen pressure and residence time such that the distillate liquid product boiling within the range C_5 to 454° C. is an amount at least equal to that obtainable by performing said process under the same conditions except for a total slurry residence time of 0.3 hour before quenching, separating said reaction effluent into fractions without hydrogenative reaction of said reaction effluent subsequent to quenching and before said separation step, one fraction comprising solvent boiling range liquid and a second fraction comprising normally solid dissolved coal, the yield of said solid dissolved coal product comprising at least 30 weight percent of said coal feed on a moisture-free basis, recycling said solvent boiling range liquid as recycle solvent for mixing with said feed coal without any hydrogenative reaction thereof following said quenching step, the amount of said solvent boiling range liquid being sufficient to provide at least 80 weight percent of that required to maintain said process in overall solvent balance.

4,328,089

COMBINED DEWATERING AND LIQUID PHASE HYDROGENOLYSIS OF RAW PEAT USING CARBON MONOXIDE

Esteban Chornet, Sherbrooke, Canada, and Jean-Claude Cavalier, Le Pian, France, assignors to Universite de Sherbrooke, Quebec, Canada

Filed Aug. 19, 1980, Ser. No. 179,566
Claims priority, application Canada, Sep. 10, 1979, 335357
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—8 R **2 Claims**

1. Process for the hydrogenolysis of raw humid peat with carbon monoxide which consists essentially of submitting untreated peat as obtained from the bog and having a water content of from 80 to 95% to the action of carbon monoxide at a temperature of from 350° to 373° C. and under a total pressure up to 35 MPa, separating the aqueous phase from the non-aqueous phase and recovering the hydrocarbons and/or bitumen-like compounds from the non-aqueous phase.

4,328,090

PROCESS FOR PRODUCTION OF HYDROGENATED HYDROCARBON POLYMERS AND CATALYST USEFUL THEREFORE

A. Nelson Stuckey, Jr., Baton Rouge, La., and John R. Shutt, Duesseldorf, Fed. Rep. of Germany, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 31, 1980, Ser. No. 174,216
Int. Cl.³ C10C *1/20, 3/02*
U.S. Cl. 208—44 **10 Claims**

1. In a process for making petroleum resins in which a steam cracked petroleum distillate fraction boiling in the range of 20° C. to 280° C. is thermally polymerized, and the polymeric resin so obtained is subjected to catalytic hydrogenation/decolorization, the improvement which consists of the use of a hydrogenation catalyst comprising a sulfided nickel-tungsten catalyst on a gamma alumina support having a fresh catalyst surface area ranging from 120 to 300 m^2/g and containing from 2 to 10% by weight nickel and from 10 to 25% by weight tungsten said support having a small pore volume in the 15 A–300 A radius range of less than 70% of the total pore volume whereas the large pores or channels having radii in the range of 10,000 A and 75,000 A are at least 10% of the total pore volume between 10 A and 75,000 A.

4,328,091

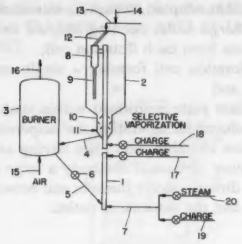
SELECTIVE VAPORIZATION PROCESS

David B. Bartholic, Watchung, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 90,247, Nov. 1, 1979, Pat. No. 4,263,128, which is a continuation-in-part of Ser. No. 875,326, Feb. 6, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,736
Int. Cl.³ C10G *25/09*
U.S. Cl. 208—91 **12 Claims**

1. In a selective vaporization process for decarbonizing and demetallizing heavy petroleum fractions by contacting such fraction and an inert gas for reduction of hydrocarbon partial pressure with a finely divided inert solid contact material at low cracking severity conditions of high temperature and short hydrocarbon residence time in a rising confined column, separating vaporous products of said contacting from said contact material bearing a combustible deposit of unvaporized high Conradson Carbon or high metal content constituents of said petroleum fraction, quenching said vaporous products to a temperature below that at which substantial thermal cracking occurs, contacting said separated contact material with an oxidizing gas to burn said combustible deposit and heat the contact material to high temperature and returning the so

heated contact material to the lower portion of said confined column for renewed contact with said heavy petroleum fraction; the improvement providing flexibility in rate of charging said fraction, or in control of said residence time or both which



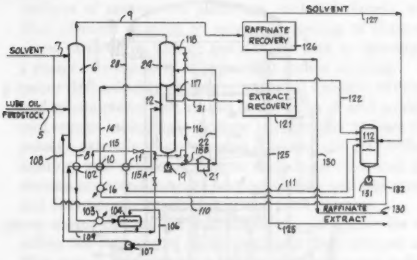
comprises introducing said inert gas to the lower portion of said confined column, injecting said heavy petroleum fraction to a point in said column at or above said lower portion and varying the said point of injection to vary the said residence time.

4,328,092

SOLVENT EXTRACTION OF HYDROCARBON OILS

Avilino Sequeira, Jr., Port Arthur, Tex., assignor to Texaco Inc., White Plains, Tex.

Filed Mar. 7, 1980, Ser. No. 128,164
Int. Cl.³ C10G *21/20*
U.S. Cl. 208—326 **3 Claims**



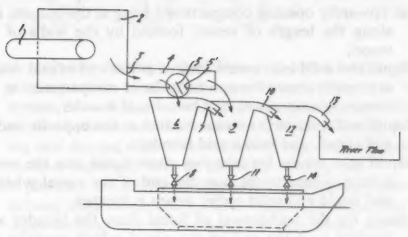
1. In a method of solvent refining a petroleum based lubricating oil stock containing aromatic and non-aromatic components with N-methyl-2-pyrrolidone wherein said lubricating oil stock is contacted with N-methyl-2-pyrrolidone in a solvent extraction zone at a temperature in the range of 50° to 120° C. (120° to 250° F.) and a solvent to oil dosage in the range of 100 to 300 volume percent forming an aromatics-rich primary extract and a solvent refined oil raffinate having a predetermined refractive index, the improvement which comprises separating said primary extract from said raffinate, cooling the aromatics-rich primary extract to a temperature in the range of 10° C. (18° F.) to 45° C. (113° F.) below said solvent extraction temperature whereby two separate liquid phases are formed consisting of a secondary extract phase relatively richer in aromatic hydrocarbons than said primary extract and a secondary raffinate phase relatively poorer in aromatic hydrocarbons than said primary extract, separating said secondary raffinate from said secondary extract, returning 0.1 to 0.5 volumes of said secondary raffinate to said solvent extraction zone for each volume of lubricating oil stock supplied to said solvent extraction zone into admixture with said lubricating oil stock in said zone, supplying a substantially reduced dosage of solvent to fresh feed lubricating oil stock to said solvent extraction zone producing an increased yield of a solvent refined oil raffinate of said predetermined refractive index, and withdrawing said refined oil raffinate from said extraction zone.

4,328,093

DEVICE FOR SEPARATING GRANULATED MATERIAL FROM A FLUID FLOW

Nenad Zrnic, and Branislav Bilen, both of Belgrade, Yugoslavia, assignors to The Institute of Technical Sciences of the Serbian Academy of Sci. & Art., Belgrade, Yugoslavia

Filed Aug. 18, 1980, Ser. No. 178,768
Claims priority, application Yugoslavia, Nov. 5, 1979, 2705/79
Int. Cl.³ B03B *5/64*
U.S. Cl. 209—3 **10 Claims**



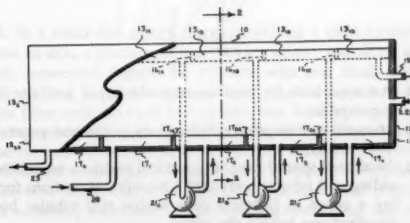
1. A device for separating solid particles from a moving liquid slurry stream comprising a chamber having a bottom, a pair of spaced end panels and a side panel, conduit means for conveying a slurry into said chamber and formed with a pair of discharge ports in said end panels for discharging said slurry in the form of substantially diametrically opposed impinging jets, an outlet port in the lower portion of said side panel of said chamber disposed in communication with a channel having a base and spaced side walls, a port formed in said base spaced downstream from said outlet port, a deflector extending between said side walls above said port terminating at an upper edge disposed intermediate of the height of said side walls and positioned to intercept and direct the lower layer of slurry flowing in said channel through said port, and deposition means disposed below said port for receiving the slurry discharged through said port in said channel.

4,328,094

APPARATUS AND PROCESS FOR THE BENEFICIATION, WASHING, ELUTRIATION AND CLEANING OF PARTICULATE SOLIDS AND RECOVERY OF CHEMICAL VALUES

Albert C. Peck, 9770 Highland Rd., Baton Rouge, La. 70810

Filed Feb. 8, 1980, Ser. No. 119,961
Int. Cl.³ B03B *5/66*
U.S. Cl. 209—160 **15 Claims**



1. Apparatus for the benefication of solids particles, and for

the elutriation and washing of small particulate solids, slurried within a liquid which comprises

an elongate vessel formed by enclosing side walls and end walls, for containing a liquid, or slurry of the liquid and solids, the cross-section of the vessel, taken in a direction perpendicular to its major axis, being wide at the top and narrow near the bottom of the vessel, the interior of which is of uniform cross-section and unrestricted from end to end,

a launder arrayed along the top of the outer side wall of the vessel, the launder being closed by end walls, and having an outer side wall disposed along the length of said side wall of the vessel, the side wall of the launder being connected to the outer side wall of the vessel via a launder bottom wall, the top edge of the side wall of the vessel forming a lip over which a liquid can flow into the launder,

an upwardly opening compartment lying at the bottom, and along the length of vessel, formed by the walls of the vessel,

liquid and solid inlet means located at one end of said vessel, at a height above the upwardly faced compartment at the bottom of said vessel, and below said launder,

liquid and solid outlet means located at the opposite end of said vessel, and below said launder,

liquid inlet means for injecting clean liquid into the vessel bottom compartment near the end of the vessel wherein said liquid and solid outlet means is located,

means for the withdrawal of liquid from the launder at a location near the end of the vessel which contains the liquid and solids inlet means, and

means for withdrawing overflow liquid from the launder, and injecting said overflow liquid into said bottom compartment at a point intermediate the point of injection of the clean liquid and point of withdrawal of the liquid from the vessel.

4,328,095

APPARATUS FOR REPROCESSING OLD PAPER

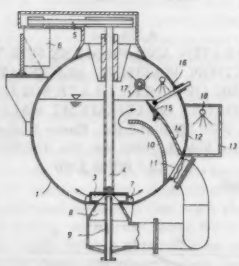
Herbert Ortner, Heidenheim, and Werner Cechovsky, Herbrechtingen, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,604

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005815

Int. Cl.³ B03D 1/16

U.S. Cl. 209—169 **14 Claims**



1. An apparatus for reprocessing old paper and the like which comprises:

a substantially elongated tubular body positioned generally horizontally;

a plurality of spaced generally vertical partition walls subdividing said tubular body into a plurality of sections forming a series of flotation cells within said tubular body arranged one behind the other;

a suspension inlet on each flotation cell;

a suspension discharge outlet on each cell adapted to receive the suspension discharge from that flotation cell and pass said suspension discharge to the suspension inlet of the adjacent flotation cell;

feeding means for introducing the suspension into each flotation cell;

air infeed means adapted to pass air into each flotation cell;

a foam discharge outlet opening adapted to discharge processed foam from each flotation cell;

each said flotation cell forming a single unitary flotation chamber; and

an intermediate plate positioned within each of the unitary flotation chambers separating the suspension outlet from the flotation chamber, said plate having an edge forming with an inner surface of the body a large non-restrictive flow area directly above the inlet and between the suspension inlet and the suspension outlet.

4,328,096

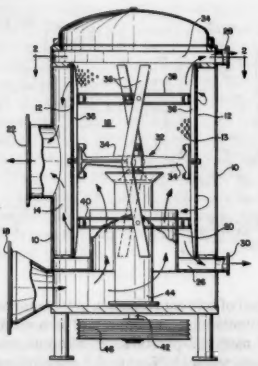
DUAL FLOW SCREENING APPARATUS

David E. Chupka, and Peter Seifert, both of Middletown, Ohio, assignors to The Black Clawson Company, Middletown, Ohio

Continuation of Ser. No. 130,917, Mar. 17, 1980, abandoned. This application May 7, 1981, Ser. No. 261,357

Int. Cl.³ B07B 1/20

U.S. Cl. 209—240 **10 Claims**



1. A pressurized screening apparatus comprising, a pressurized housing, screening means located in a fixed position within said housing for separating feed stock into at least one accepts portion and a plurality of rejects portions, means for continuously supplying feed stock to a space intermediate the first and second ends of said screening means, means for dividing said feed stock into first and second flow portions directed to said first and second ends, respectively, of said screening means, said means for dividing said feed stock including rotary impeller means extending at least a portion of the length of said screening means and mounted for axial rotation therein, said rotary impeller means including a plurality of rotor foils supported thereon and positioned within a short distance of the radially inward facing surface of said screening means, means for continuously withdrawing the accepts portion of said feed stock from said housing, and means for collecting and continuously withdrawing the rejects portions of said first and second flow portions of said feed stock from said housing.

4,328,097

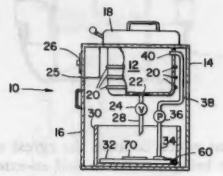
APPARATUS FOR FILTERING FRYING OIL

Bennie M. Whaley, and Janice C. Whaley, both of 3872 Concord Blvd., Concord, Calif. 95419

Division of Ser. No. 1,293, Jan. 5, 1979, Pat. No. 4,230,574. This application Jan. 10, 1980, Ser. No. 110,830

Int. Cl.³ B01D *35/28*; A47J *37/12*

U.S. Cl. 210—167 3 Claims



1. In a deep fat fryer including a vessel for receiving cooking oil and food to be cooked; a drain opening at the bottom of said vessel; valve means for opening and closing said drain opening; a removable cover for closing off the top of said vessel; and heater means about said vessel for heating the cooking oil received therein, and improved apparatus for filtering said cooking oil comprising:

a drain pan positioned beneath said drain opening for receiving cooking oil therein;

a pair of filter screens positioned adjacent to each other in said drain pan and defining therebetween a hollow chamber; one of said screens including a centrally positioned opening;

a disposable filter element defined in a position such that the surfaces of said screen plates are enclosed therein, said filter element adapted to receive a coating of diatomaceous earth on its surface and defined with an opening at a position operatively adjacent said screen opening;

a spacer defined in a position in a central location between said screen plates, and affixed to the other of said screens, said spacer including a hollow interior and at least one passage extending between said chamber and said hollow interior, said spacer defined to include an open end and defined to extend through said opening in said one screen and corresponding opening in said filter element;

pump means operatively connected to said spacer for enabling the drawing of oil through said filter element and filter screen into said chamber and thereafter said hollow spacer, and further including conduit means for transferring said oil from said hollow spacer and into said vessel; and

means for deflecting the oil as said oil is drained into said drain pan, including a plate member positioned directly below said drain opening and substantially adjacent said filter surface such that diatomaceous earth existing on said filter surface is not disturbed to a substantial extent during said draining.

4,328,098

FILTER APPARATUS

Robert A. Benson, Cohasset, Mass., assignor to Seapower, Inc., Weymouth, Mass.

Continuation-in-part of Ser. No. 139,839, Apr. 14, 1980, Pat. No. 4,267,043. This application May 4, 1981, Ser. No. 260,093

Int. Cl.³ B01D *29/42*

U.S. Cl. 210—195.1 8 Claims

6. Filter apparatus for continuously separating filterable mixtures having at least one filterable component and a residual component, including

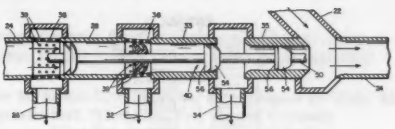
a closed loop tubular enclosure having an inlet

at least one filter section spaced downstream from said inlet

a residual material outlet spaced downstream from said filter section and upstream from said inlet between said filter section and said inlet, and

a plurality of radially compressible longitudinally spaced driving disks within said enclosure and mounted for movement downstream therearound

said driving disks being driven downstream through said enclosure past said filter section for discharging at least a portion of said filterable component through said filter section and said residual material component through said outlet



said enclosure having a backflow preventing, differential piston portion of reduced inner cross section area upstream from said inlet and downstream from said filter section between said filter section and said inlet for driving said driving disks downstream through said enclosure by flow from said inlet to said filter section, and

said plurality of radially compressible longitudinally spaced driving disks within said enclosure sealingly contacting its inner walls at least in said backflow preventing portion.

4,328,099

MULTI-DISK ROTARY FILTER

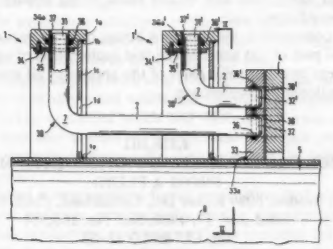
Franz Krappmann, Grünwald; Bernhard Richter, Puchheim, and Siegfried Paruse, Pentenried, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,185

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004707

Int. Cl.³ B01D *33/38*

U.S. Cl. 210—232 6 Claims



1. In a multi-disk rotary filter comprising a shaft rotatable about an axis, a plurality of cell carriers axially spaced on said shaft, connected thereto for rotation with said shaft, and a control head for the control of fluid supplied to and drawn from filter cells on each cell carrier, and fluid passages connecting each cell carrier with said head, the improvement wherein each of said passages comprises a unitary tube having a radial portion communicating with a respective cell at a respective carrier, an elbow connected to said radial portion, and an axially extending straight portion connecting said cell with said head, said shaft being provided with a disk cooperating with said head and at which the straight portions of said tubes sealingly and releasably terminate.

4,328,100

FILTER DEVICE WITH A CHAMBER, A HELICOIDALLY CONFORMED SUPPORT AND A FILTER RETAINED BY THE SUPPORT

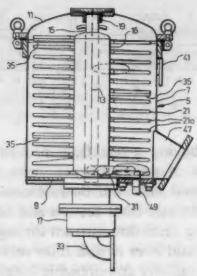
Eugen Moritz, and Christian Moritz, both of Riehen, Switzerland, assignors to Filtroba AG, Basel, Switzerland

Filed Mar. 31, 1980, Ser. No. 135,510

Claims priority, application Switzerland, Apr. 4, 1979, 3105/79

Int. Cl.³ B01D *29/06*

U.S. Cl. 210—304 **15 Claims**



1. Filtering apparatus comprising a chamber with an inlet for the material to be filtered, a filtrate outlet and a residue outlet for discharging the retained residues, a helicoidally conformed support arranged in the chamber, and a filter retained by said support;

a central member connected at one end to said filtrate outlet and contained in said filter apparatus in such a manner that the filtrate passes through only the lower portion thereof;

a hollow helix delimited conjointly by said support and said filter, said helix having a wide helicoidal passage uninterruptedly extending throughout substantially the total helix and being connected at only one end of the helix to said filtrate outlet which allows said helix to be temporarily elastically elongated or compressed;

said helix forming consecutive convolutions about the axis of the helix;

said consecutive convolutions, in a section passing through and along said axis of the helix, being totally mutually spaced apart and;

said consecutive convolutions being, over at least a substantial part of the helix, in the said section free of any attachment to other solid parts of the apparatus all around their sectional circumference.

4,328,101

DEVICE FOR SEPARATING PARTICULATE MATTER FROM A FLUID

Carl V. Broden, 5080 Keane Dr., Carmichael, Calif. 95608

Filed Jun. 17, 1980, Ser. No. 160,314

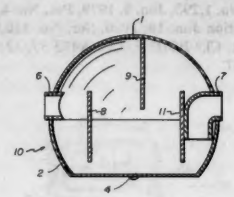
Int. Cl.³ B01D *21/02*

U.S. Cl. 210—320 **6 Claims**

1. A device for separating particulate matter from a fluid comprising in combination:

an inlet conduit carrying said matter and fluid,

a separation chamber formed from two portions and communicating with said inlet conduit provided with baffle means therein to direct said matter and fluid through a tortuous path, and sealing means between said two portions comprising a channel in an edge of one said portion, a gasket disposed therein, a depending rib in the other said portion for insertion into said channel, and at least one latch for affixing said two portions and depressing said gasket, said baffle means includes a first baffle extending from a top edge of said inlet conduit into said fluid in said reservoir and laterally spaced from said inlet, a second baffle extending from a ceiling of said separation chamber to an area below said top edge of said inlet conduit, and spaced from said first baffle, and a third baffle affixed to an



outlet means which controls the egress of the fluid, said third baffle being parallel to and co-extensive with said first baffle.

4,328,102

MEMBRANE APPARATUS HAVING ALTERNATE OPPOSITE FLOW TRANSVERSE TO MEANS FLOW

Brian J. Bellhouse, The Lodge, North St., Islip, Oxfordshire, and William S. Haworth, Redding Wyck House, Market St., Charlbury, Oxford, both of England

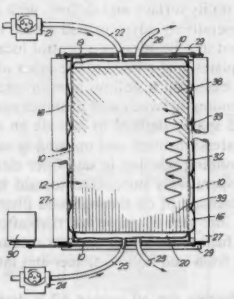
PCT No. PCT/GB79/00200, § 371 Date Jun. 12, 1980, § 102(e) Date Jun. 12, 1980, PCT Pub. No. WO80/01043, PCT Pub. Date May 29, 1980

PCT Filed Nov. 21, 1979, Ser. No. 206,545

Claims priority, application United Kingdom, Nov. 22, 1978, 45576/78

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.4 **13 Claims**

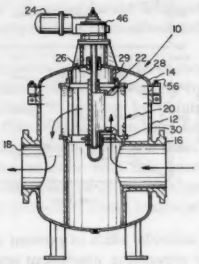


1. Apparatus for effecting transfer of heat or mass between two fluids through a transfer membrane, comprising a first conduit having generally opposite edges for the flow of a first one of the fluids and defined between two predomiantly planar surfaces of which at least one is provided by the membrane, said membrane having alternate furrows and ridges extending side-by-side in a direction with a component along the first conduit, said first conduit having a longitudinal direction extending generall in the direction of said flow; first pumping means for passing the first fluid with a mean flow along the first conduit, and second pumping means for applying fluid pressure alternately to generally opposite edges of said first conduit to superimpose on the mean flow a reciprocatory flow component transverse to the direction of mean flow and transverse to the length of the furrows and ridges to cause a resulting pulsation of fluid to translate the fluid first in one direction and then in an opposed direction past the furrows to produce in the furrows a rotary flow having components of motion parallel and perpendicular to the reciprocatory flow component and to the membrane.

4,328,103
STRUCTURAL STRAINER

John B. Kraeling, Jr.; Alexander B. Mann, and Ronald G. Bukowski, all of Erie, Pa., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Dec. 13, 1979, Ser. No. 103,200
Int. Cl.³ B01D *29/06*
U.S. Cl. 210—411 6 Claims



1. A strainer for removing debris from a fluid passing thereby comprising:

A. a hollow body having an inlet and outlet thereto;

B. a cover attached to and closing off said hollow body;

C. a backwash arm assembly extending through and connected to said cover and terminating within said hollow body;

D. an upper support ring connected to the cover and having an annular downwardly facing channel;

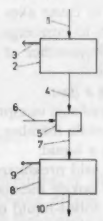
E. a lower support ring detachably connected to the terminus of the backwash arm assembly and having an annular upwardly facing channel;

F. a radially convoluted screen cylinder having end caps at opposite ends thereof connected to and encapsulating said screen, said end caps sealably retained in said support rings so that said cylinder is removable with said cover and is positioned above said inlet and outlet, said cylinder being capable of withstanding loads imposed on it by said fluid and debris and being positioned above said inlet and outlet so that fluid enters the strainer, flows upward into the cylinder, outward through the cylinder and downward to and out of said outlet.

4,328,104
PROCESS OF DEMULSIFYING AND CONVERTING EMULSIONS OF OILS, GREASES AND FATS

Reinhart Hanke, and Bertalan Treso, both of Leoben, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed May 27, 1980, Ser. No. 152,985
Claims priority, application Austria, Jun. 28, 1979, 4556/79
Int Cl.³ C02F *3/28*
U.S. Cl. 210—603 16 Claims

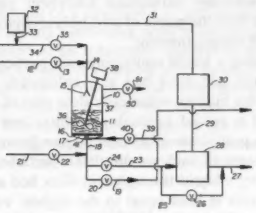


1. A process of demulsifying and coverting emulsions of oils, greases, and fats wherein the emulsions are processed together with sewage sludges, characterized by adding the emulsion to be demulsified and converted to the second digesting tank of a digested sludge or to a sludge liquor which has been obtained by a biological sewage treatment and has been subjected to a first digesting step, which involves mainly an acid fermentation and makes mainly organic acids and CO_2 available, the resulting mixture is subjected to a second digesting step that is conducted under anaerobic conditions and in an environment which differs from that of the first step and results mainly in an evolution of methane, said two digesting steps being carried out in two separate digesting tanks.

4,328,105
TREATMENT OF SUSPENDED SOLIDS—AND ADSORBABLE CONTAMINANT—CONTAINING LIQUID

William B. Arbuckle, Gainesville, Fla., assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 6, 1980, Ser. No. 119,136
Int. Cl.³ B01D *37/02*
U.S. Cl. 210—663 24 Claims



14. A process for removal of suspended solids and adsorbable contaminants from an influent liquid containing same, comprising:

(a) providing a filter bed of porous polyurethane particles;

(b) placing a particulate adsorbent selective for said adsorbable contaminants into the pores of said polyurethane particles;

(c) passing said suspended solids- and adsorbable contaminants-containing influent liquid through said filter bed for deposition of said suspended solids on said polyurethane particles and adsorption of said adsorbable contaminants by said particulate adsorbent to form a solids- and adsorbable contaminants-depleted liquid effluent, and discharging said liquid effluent from said filter bed;

(d) continuing step (c) until said filter bed is at least partially loaded with deposited solids and adsorbed contaminants;

(e) removing deposited solids and adsorbate loaded adsorbent from said at least partially loaded filter bed polyurethane particles to regenerate same by one of the following methods,

(1) adding a regeneration liquid to the filter bed polyurethane particles, mechanically mixing the regeneration liquid containing said polyurethane particles for sufficient time to cause deposited solids and adsorbate-loaded adsorbent to disengage from the polyurethane particles and pass into the regeneration liquid, and draining the disengaged solids-and adsorbent-containing regeneration liquid from the polyurethane particles,

(2) adding one to five bed volumes of a regeneration liquid to said polyurethane particles, sparging gas into the regeneration liquid containing said polyurethane particles in sufficient quantity and rate to agitate the regeneration liquid and polyurethane particles and cause deposited solids and adsorbate loaded adsorbent to disengage from the polyurethane particles and pass into the regeneration liquid, and draining the agitated solids-and adsorbent-containing regeneration liquid from the polyurethane particles,

(3) adding one to five bed volumes of a regeneration liquid to said polyurethane particles at least partially loaded with filter solids, sparging gas into the regeneration liquid containing said polyurethane particles at a rate of 0.5 to 5.0 standard cubic feet of gas per minute per square foot of cross-section of said filter bed of said polyurethane particles, while mechanically agitating the regeneration liquid containing said polyurethane particles, to cause filtered solids to disengage from the polyurethane particles and pass into the regeneration liquid to form solids-enriched regeneration liquid, and terminating the mechanical mixing of said regeneration liquid containing said polyurethane particles and immediately thereafter draining the solids-enriched regeneration liquid from the polyurethane particles; and

(f) repeating steps (b) to (e) in sequence, wherein step (b) is carried out by one of the following methods:

(1) flowing a liquid containing said particulate adsorbent through said filter bed at a volumetric flow rate at least equal to the highest volumetric flow rate at which influent liquid is passed through said filter bed in step (c), whereby particulate adsorbent passes from the liquid into the pores of said polyurethane particles and firmly lodges therein;

(2) flowing a liquid containing said particulate adsorbent through said filter bed at a volumetric flow rate less than the highest volumetric flow rate at which influent liquid is passed through said filter bed in step (c) to cause particulate adsorbent to pass from the liquid into the pores of said polyurethane particles, followed by flowing a liquid through said filter bed at a volumetric flow rate at least equal to the highest volumetric flow rate at which influent liquid is passed through said filter bed in step (c), to firmly lodge particulate adsorbent in the pores of said polyurethane particles; or

(3) mixing a liquid containing said particulate adsorbent in said filter bed to cause particulate adsorbent to pass from the liquid into the pores of said polyurethane particles, at least partially draining the liquid from said filter bed such that not more than one volume of the liquid remains associated with the polyurethane particles, and flowing an impurity-free liquid through said filter bed at a volumetric flow rate at which influent liquid is passed through said filter bed in step (c), to firmly lodge particulate adsorbent in the pores of said polyurethane particles, whereby said particulate adsorbent is firmly lodged in the pores of said polyurethane particles throughout step (c) and is not fluidized in the filter bed during said step.

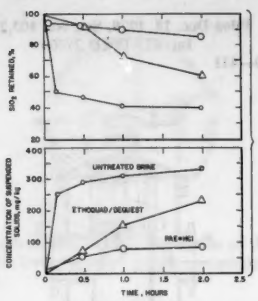
4,328,106

METHOD FOR INHIBITING SILICA PRECIPITATION AND SCALING IN GEOTHERMAL FLOW SYSTEMS

Jackson E. Harrar, Castro Valley; Lyman E. Lorensen, Orinda, and Frank E. Locke, Lafayette, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 13, 1980, Ser. No. 159,313
Int. Cl.³ C02F 5/14
U.S. Cl. 210—700 **18 Claims**

1. A method for inhibiting silica scaling and precipitation from silica-rich geothermal brine in geothermal flow systems comprising injecting a small but effective amount of a mixture of cationic nitrogen-containing compound, acid, and crystalline scale inhibitor into geothermal brine containing small suspended silica particles to cause the nitrogen-containing compound to adhere to the surface of colloidal silica particles



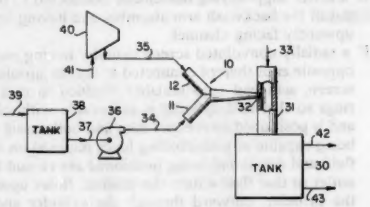
and stabilize the colloidal silica to prevent aggregation of the particles, thereby preventing subsequent scale formation.

4,328,107

PROCESS AND APPARATUS FOR FORMING DISPERSIONS

Frank C. Wright, Hamilton Township, Mercer County, N.J., assignor to Synergo, Inc., Philadelphia, Pa.

Filed Nov. 28, 1980, Ser. No. 211,325
Int. Cl.³ C02F 1/24
U.S. Cl. 210—703 **22 Claims**



19. An apparatus for separating solids from a solids-liquid mixture by flotation, which comprises:

a means for forming microfoam including a gas nozzle member having an inlet and outlet orifice and formed with a tapered passageway from said inlet orifice to said outlet orifice; a liquid nozzle member having an inlet and outlet orifice and formed with a tapered passageway from said inlet orifice to said outlet orifice; and a gas-liquid nozzle member having an inlet and outlet orifice and formed with a tapered passageway from said inlet orifice to said outlet orifice, said gas nozzle member and said liquid nozzle member positioned to cause axes of said passageways of said nozzle members to converge on said inlet orifice of said gas-liquid nozzle member at an angle of from 0° to 90°;

means for compressing a gas;

means for introduction of said compressed gas into said inlet orifice of said gas nozzle member;

means for pressurizing a liquid;

means for introducing said pressurized liquid into said inlet orifice of said liquid nozzle member;

means for holding the solids-liquid mixture;

means for introducing microfoam into said solids-liquid mixture whereby solids float to the top of said holding means; and

means for withdrawing a liquid and floating solids from said holding means.

4,328,108

COMPOSITION FOR THE ELIMINATION OF CIRCUMFERENTIAL STRESS CRACKS IN SPUN POLYESTERS

William O. Deeken, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 20, 1979, Ser. No. 77,417
Int. Cl.[3] D06M *15/10*
U.S. Cl. 252—8.6 3 Claims

1. A composition of matter for the lubrication of spun polyester filaments susceptible to circumferential stress cracking, comprising:

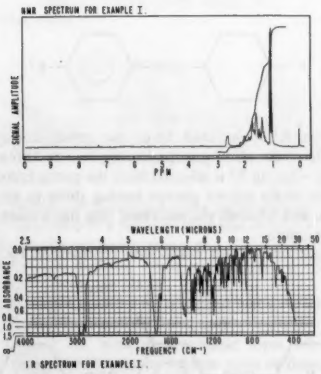
a miscible non-aqueous solution of from about 10 to about 50 percent by volume of a fiber finishing emulsion and from about 50 to about 90 percent by volume of an organic solvent; said fiber finishing emulsion having emulsifiers, lubricating oils, antistat oils, and heat stabilizers; said organic solvent miscible with said emulsion comprising mineral oil; said mineral oil being composed of liquid paraffin and, a mixture of liquid hydrocarbons from petroleum.

4,328,109

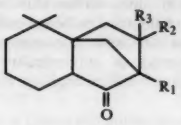
BRIDGED KETONES, PROCESS FOR PREPARING SAME AND USE THEREOF IN AUGMENTING OR ENHANCING FABRIC SOFTENERS

Mark A. Sprecker, Sea Bright; James M. Sanders, Eatontown; William L. Schreiber, Jackson; Hugh Watkins, Lincroft; Joaquin F. Vinals, Red Bank, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Thomas J. O'Rourke, Red Bank, N.J.; Myrna L. Hagedorn, Highland Park, N.J., and Philip Klemarczyk, Old Bridge, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 95,149, Nov. 16, 1979, Pat. No. 4,250,338.
This application Oct. 23, 1980, Ser. No. 200,011
Int. Cl.[3] D06M *13/12*
U.S. Cl. 252—8.6 1 Claim



1. A process for augmenting or enhancing the aroma of a dryer-added fabric softening article comprising the step of intimately admixing with the coating composition for the outer coating of said dryer-added fabric softening article from 0.1% up to 5.0% by weight based on said fabric softener article of at least one substantially pure tricyclic ketone having the structure:



wherein R_1, R_2 and R_3 are the same or different and each represents hydrogen or methyl.

4,328,110

FABRIC CONDITIONING ARTICLES AND METHODS OF USE

Donald L. Green, Forest Lakes, N.J., assignor to Beecham Inc., Clifton, N.J.

Filed Sep. 17, 1980, Ser. No. 188,067
Int. Cl.[3] D06M *13/46, 13/30*
U.S. Cl. 252—8.75 28 Claims

1. A tablet useful for conditioning fabrics during the drying cycle of an automatic laundry dryer which comprises a fabric conditioning amount of a powdered or granulated fabric conditioning agent having a softening point in the range of temperatures encountered in an automatic laundry dryer during the drying cycle, an amount of a suitable filler sufficient to achieve the desired degree of hardness of the tablet and also to allow adequate tablet breakup during use, an amount of binder/disintegrant sufficient to facilitate tableting of the conditioning mixture and disintegration of the tablet formed during use, and a small amount of lubricant sufficient to facilitate tableting.

4,328,111

MODIFIED OVERBASED SULFONATES AND PHENATES

Roger W. Watson, Batavia, and Joseph S. Strukl, Lisle, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 20, 1978, Ser. No. 962,283
Int. Cl.[3] C10M *1/40*
U.S. Cl. 252—33.4 41 Claims

1. A lubricating oil composition comprising a major proportion of lubricating oil and an effective amount of an improved oil soluble additive comprising about 0.05 to about 20 weight percent of the composition, said additive comprising the reaction product of basic compound comprising overbased metal sulfonate with acidic compound comprising phosphoric acid, phosphoric acid ester, or mixtures thereof, or overbased metal phenate with acidic compound comprising phosphoric acid, phoshoric acid ester or mixtures thereof.

4,328,112

PROCESS FOR THE PREPARATION OF SULFUR-CONTAINING ADDITIVES FOR LUBRICANT COMPOSITIONS

Jan Vis, Zevenaar, and Willem J. de Klein, Dieren, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jan. 19, 1981, Ser. No. 226,277
Claims priority, application Netherlands, Jan. 21, 1980, 8000362
Int. Cl.[3] C10M *1/38;* C07G *17/00*
U.S. Cl. 252—47.5 8 Claims

1. In a process for preparing a sulfur-containing composition useful as a lubricant additive wherein an organic carboxylic acid is sulfurized in the form of the acid or an ester or amide derivative thereof, the improvement comprising using as the acid or acid portion of an ester or amide derivative, a carboxylic acid or mixture thereof obtained by telomerizing an ethylenically unsaturated compound under inert conditions in a reaction medium containing from about 10^{-3} to about 10^{-10} moles per liter of an at least trivalent manganese compound

and one or more carbonyl compounds having at least one hydrogen atom on an alpha-carbon atom wherein at least 60 percent by weight of the total carbonyl-containing compound content is present as carboxylic anhydride and the molar ratio of the reacted quantity of ethylenically unsaturated compounds to the at least trivalent manganese compound is at least 4.

8. A lubricant composition containing a major amount of a lubricating oil and a minor amount of one or more sulfur-containing additives prepared according to the process of claim 1, 2, 4, 5, or 6.

4,328,113

FRICTION REDUCING ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill; Joan M. Kaminski, Clementon; Henry Ashjian, East Brunswick, and Henry A. Gawel, Clark, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 14, 1980, Ser. No. 112,025

Int. Cl.³ C10M *1/54*

U.S. Cl. 252—49.6 **13 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity of grease prepared therefrom, and a minor effective proportion of a friction reducing additive consisting of C_8 to C_{29} borated adducts of a hydrocarbyl mono- or diamine and mixtures thereof wherein said hydrocarbyl comprises a member selected from the group consisting of alkyl, alkenyl, alkylene cycloalkyl and mixtures thereof.

4,328,114

DETERGENT COMPOSITIONS AND PROCESSES FOR MANUFACTURING THEM

Richard S. Johnson, and John K. Potter, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,791

Claims priority, application United Kingdom, Oct. 31, 1979, 37630/79

Int. Cl.³ C11D *3/06, 7/42*

U.S. Cl. 252—135 **2 Claims**

1. In a process for the formation of an adjunct suitable for incorporation into detergent powders which process comprises forming a hydratable salt into a granule and absorbing a liquid nonionic surfactant onto the granule, the improvement which comprises simultaneously granulating and hydrating sodium tripolyphosphate or disodium hydrogen orthophosphate to full hydration and subsequently adding the liquid nonionic surfactant to the granules formed thereby without carrying out an intermediate drying step whereby the sodium tripolyphosphate and disodium hydrogen orthophosphate can absorb significantly larger quantities of liquid nonionic surfactant.

4,328,115

CHEMICAL ACIDOGEN SYSTEM FOR FOODSTUFFS

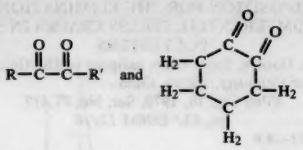
Fred L. Metz, Concord, Ohio, assignor to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 63,244, Aug. 3, 1979, Pat. No. 4,264,636, which is a continuation-in-part of Ser. No. 861,908, Dec. 19, 1977, Pat. No. 4,199,609. This application May 27, 1980, Ser. No. 153,315

Int. Cl.³ C01B *15/02*

U.S. Cl. 252—186 **4 Claims**

1. As a chemical acidogen system for supplying acid to proteincontaining foodstuffs and leavening to bakery doughs, hydrogen peroxide in combination with at least one aliphatic C_{2-6} dione wherein the carbonyl groups are vicinal to each other, said dione conforming to one of the structures:



wherein R and R′ are each hydrogen or C_{1-2} alkyl.

4,328,116

LIQUID CRYSTAL COMPOSITIONS FOR MULTIPLEXED DISPLAYS

Kenneth J. Harrison, Malvern Link, England, assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

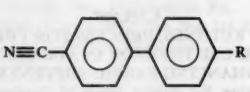
Continuation-in-part of Ser. No. 90,423, Nov. 1, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,774

Int. Cl.³ C09K *3/34;* G02F *1/13*

U.S. Cl. 252—299.63 **9 Claims**

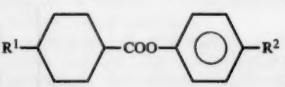
1. A liquid crystal composition for multiplexed twisted nematic displays which exists in a nematic mesophase from at least about −20° to 50° C., comprising:

(a) From two to four cyanobiphenyl compounds represented by the formula:



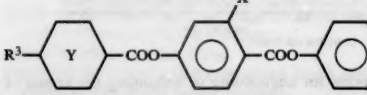
wherein R is selected from the group consisting of straight chain alkyl groups having two to ten carbon atoms and the propoxy radical, at least one of said cyanobiphenyl compounds having an alkyl group of from two to seven carbon atoms, and when R in one of said cyanobiphenyl compounds is a propoxy radical, said propoxy radical containing compound ranges from approximately 5 to 15% by weight of the total composition;

(b) at least one cyclohexane carboxylate ester compound represented by the formula:



wherein R^1 if selected from the group consisting of straight chain alkyl groups having two to three carbon atoms, wherein R^2 is selected from the group consisting of straight chain alkoxy groups having three to six carbon atoms, and wherein the saturated ring has a trans conformation; and,

(c) at least one diester compound represented by the formula:



wherein R^3 is selected from the group consisting of straight chain alkyl groups having one to five carbon atoms, wherein R^4 is selected from the group consisting of straight chain alkyl groups having four or five carbon atoms, wherein X is H or Cl, and wherein

is either aromatic or is saturated with a trans conformation, subject to the proviso that the cyanobiphenyls range from about 60 to 73% by weight of the composition, the cyclohexane carboxylate esters range from about 15 to 23% by weight of the composition and the diesters range from about 5 to 10% by weight of the composition when X is H and from about 5 to 16% by weight when X is Cl.

4,328,117

PROCESS OF OPACIFICATION OF A GASEOUS MEDIUM IN THE OPTICAL AND INFRARED BANDS OF THE ELECTROMAGNETIC SPECTRUM

Pierre Godefroy, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed May 20, 1980, Ser. No. 151,590
Claims priority, application France, May 23, 1979, 79 13195
Int. Cl.³ C09K *3/30, 9/00*
U.S. Cl. 252—305 **7 Claims**

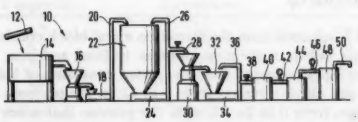
1. A process for opacifying a gaseous medium transparent to optical and thermal radiation, consisting in diffusing in the medium a boron trichloride aerosol, at a delivery rate sufficient to attenuate electromagnetic radiations extending from 0.4 to 15 μm to an extent greater than 90%.

4,328,118

ALGAE PROCESSING

Eric H. Friedmann, Rosebank, South Africa, assignor to Ecological Consultants (Proprietary) Ltd., Athlone Industria, South Africa

Filed Jun. 13, 1979, Ser. No. 48,068
Int. Cl.³ B01J *13/00;* **B01F** *5/08*
U.S. Cl. 252—314 **8 Claims**



1. In a method of processing algae material in which algae material is provided in a paste or flowable form, the improvement wherein the method comprises:

providing algae material which is in its natural wet state as obtained from algae plants,

cutting the algae material in its natural wet state into smaller parts until it is in colloid form, and

homogenizing the material in colloid form whereby the algae material is broken down into paste or flowable form comprising particles of minute size,

said improved method being effected without freezing or heating of the algae material and without the addition of chemicals to enable processing of the algae material.

6. A plant for processing algae, which comprises, in series, a mincer-cutter unit, a colloid mill, a holding tank provided with a circulating feed pump, a second colloid mill down-stream of the holding tank, and a homogenizing unit.

4,328,119

METHOD OF MAKING MICROCAPSULES

Hiroshi Iwasaki, Kawanishi, and Shinsuke Irii, Nishinomiya, both of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1979, Ser. No. 94,191
Claims priority, application Japan, Nov. 14, 1978, 53-140805
Int. Cl.³ B01J *13/02*
U.S. Cl. 252—316 **13 Claims**

1. A method for making microcapsules containing hydrophobic capsule core material with improved capsule core material retainability essentially comprising the steps of:

(a) preparing an aqueous dispersion having hydrophobic material particles and containing an anionic colloid material;

(b) introducing in said dispersion, a pre-polymer of at least one aldehyde and at least one amine together with an anion modifier selected from the group consisting of sulfanilic acid, glycolic acid, glycine, acid sulfite, phenol sulfonic acid and taurine; and

(c) inducing polycondensation of said aldehyde, amine and anion modifier to form in said dispersion a polycondensed anion modified aminoaldehyde resin whereby said hydrophobic particles are encapsulated by the thus polycondensed anion-modified aminoaldehyde resin.

4,328,120

CATALYST FOR THE OXIDATION OF BUTANE TO MALEIC ANHYDRIDE

Carl A. Udovich, Joliet, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 11, 1980, Ser. No. 139,233
Int. Cl.³ B01J *23/12, 23/22, 27/18*
U.S. Cl. 252—435 **2 Claims**

1. A catalyst for the production of maleic anhydride by the oxidation of butane which consists essentially of a phosphorus-vanadium mixed oxide with uranium as the promoter, wherein vanadium pentoxide in the presence of uranium is reduced and subsequently the vanadium uranium oxide solution is reacted with phosphoric acid, the atomic ratio of vanadium to phosphorus being in the range of 0.5:1 to 1.25:1 and the total atomic ratio of uranium to vanadium being in the range of 0.1:1 to 0.3:1 wherein the catalyst in the initial phase has a characteristic powder X-ray diffraction pattern using copper K alpha radiation as follows:

d angstrom	Line Position 2.θ degrees	Intensity
5.7	15.6	67
4.5	19.7	47
3.7	24.3	36
3.3	27.1	53
3.1	28.8	26
2.9	30.5	100
2.8	32.2	17
2.7	33.7	20

which upon heating at a temperature of about 600° to 800° F. under reaction conditions for the oxidation of butane to maleic anhydride converts to a phase having a characteristic powder X-ray diffraction pattern using copper K alpha radiation as follows:

d angstrom	Line Position 2.θ degrees	Intensity
6.3	14.2	10
4.8	18.5	7
3.9	23.0	100
3.1	28.5	58
3.0	30.0	29
2.7	33.8	7

4,328,121

POLYMERIZATION CATALYST AND PROCESS

Charles E. Capshew, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 4, 1980, Ser. No. 175,219
Int. Cl.[3] C08F 4/64
U.S. Cl. 252—429 B 14 Claims

1. A catalyst which forms on mixing a first catalyst component and a second catalyst component

wherein the first catalyst component is formed by the chemical combination of

(1) a metal hydrocarbyloxide compound comprising $M(OR)_2$ where M is a metal selected from Group IIA and Group IIB of the Mendeleev Periodic Table and R is the same or different and is a hydrocarbyl group having from 1 to 20 carbon atoms and

(2) a transition metal hydrocarbyloxide compound in which the transition metal is selected from the group consisting of Group IVB and Group VB transition metals of the Mendeleev Periodic Table and wherein the hydrocarbyl group is as defined in (1) and

wherein the second catalyst component is a precipitating agent comprising organometallic compounds in which the metal is selected from metals of Groups I to III of the Mendeleev Periodic Table, metal halides and oxygen-containing metal halides of elements selected from Group IIIA, IVA, IVB, VA and VB of the Mendeleev Periodic Table, hydrogen halides, and organic acid halides having the formula

wherein R' is an alkyl, aryl, cycloalkyl group or combinations thereof containing from 1 to about 12 carbon atoms, and X is a halogen atom, and further wherein the first and second catalyst components are contacted together at a temperature below about 25° C., and

wherein the catalyst comprising the first and second components is contacted with a transition metal halide ion exchange source.

4,328,122

COMPONENTS OF CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Antonio Monte, and Giuliano Cecchin, both of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Nov. 13, 1980, Ser. No. 206,541
Claims priority, application Italy, Nov. 14, 1979, 27261 A/79
Int. Cl.[3] C08F 4/64
U.S. Cl. 252—429 B 21 Claims

1. Components of catalysts for the polymerization of olefins, obtained by cogrinding an anhydrous magnesium halide with an ester of an aromatic carboxylic acid and with a silicon compound of the formula $R_mSi(OR')_n$ in which R is an alkenyl radical with from 2 to 12 carbon atoms; R' is an alkyl, a cycloalkyl or an aryl radical with from 1 to 18 carbon atoms; m is a number ranging from 1 to 2, and n is equal to 4-m; and subsequently reacting the ground product with a halogenated titanium compound liquid under the reaction conditions.

4,328,123

OLEFIN POLYMERIZATION CATALYST

David L. Beach, Gibsonia, Pa., and Adolfo Zambelli, Milan, Italy, assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 29, 1980, Ser. No. 221,200
Int. Cl.[3] C08F 4/64, 4/02
U.S. Cl. 252—429 B 58 Claims

1. A novel catalyst composition which comprises the reaction product of (A) an aluminum hydrocarbyl treated with an electron donor compound and (B) a support containing chlorine, bromine and magnesium, wherein the molar ratio of bromine to chlorine ranges between about 1:99 to about 50:50, obtained by reacting an organo magnesium compound with a mixture of chlorinated and brominated aluminum compounds, said support having been additionally treated with an electron donor compound and with titanium tetrachloride.

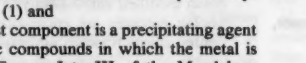
4,328,124

OLEFIN POLYMERIZATION CATALYST AND PROCESS

Anthony N. Speca; Stanley J. Katzen, both of Cincinnati, and Louis J. Rekers, Wyoming, all of Ohio, assignors to National Petro Chemicals Corp., New York, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,391
Int. Cl.[3] C08F 4/24, 4/02, 4/16
U.S. Cl. 252—430 11 Claims

1. An olefin polymerization catalyst comprising an inorganic support material having deposited thereon the reaction product of (i) a trialkyl-dialkylphosphato-titanate prepared from the reaction of



wherein R and R' are the same or different and are alkyl of from 1 to 6 carbon atoms and (ii) chromium trioxide, and heat activated in a non-reducing atmosphere at a temperature of from 200° F. up to the decomposition temperature of the support.

4,328,125

HETEROGENEOUS ANIONIC TRANSITION METAL CATALYSTS

Russell S. Drago, Champaign, Ill., and Anton El A'mma, Bensalem, Pa., assignors to University of Illinois Foundation, Urbana, Ill.

Continuation of Ser. No. 38,551, May 14, 1979, abandoned. This application Oct. 1, 1980, Ser. No. 192,793
Int. Cl.[3] B01J 31/20, 31/08; C08F 8/42; C07C 51/12
U.S. Cl. 252—426 18 Claims

1. A heterogeneous anionic transition metal catalyst containing a catalytically effective amount of an anionic species having the formula

$$M_n(CO)_m(X)_p^{z-}$$

where M is selected from the transition metal block consisting of rhodium, cobalt, ruthenium, osmium, iridium, and iron; X is an anionic ligand selected from the group consisting of halide, hydride, and alkyl; n ranges from 1 to 12; m ranges from 1 to 34; p ranges from 0 to 2n+1, with the proviso that when n is 1, p is at least 1; and z is an integer charge ranging from 1 to 5; said anionic species being ionically bound to an insoluble crosslinked anion exchange resin containing a bound quaternary ammonium cation.

7. A method for preparing a heterogeneous anionic transition metal catalyst comprising treating an insoluble crosslinked anion exchange resin containing a bound quaternary ammonium salt with a neutral transition metal carbonyl compound to form in situ the anion

$$M_n(CO)_m(X)_p^{z-}$$

where M is selected from the transition metal block consisting of rhodium, cobalt, ruthenium, osmium, iridium, and iron; X is an anionic ligand selected from the group consisting of halide, hydride, and alkyl; n ranges from 1 to 12; m ranges from 1 to 34; p ranges from 0 to 2n+1, with the proviso that when n is 1, p is at least 1; and z is an integer charge ranging from 1 to 5; said anionic species being ionically bound to the anion exchange resin.

13. A method for preparing a heterogeneous anionic transition metal catalyst comprising exchanging with an insoluble crosslinked anion exchange resin containing a bound quaternary ammonium salt the preformed anion having the formula

$$M_n(CO)_m(X)_p^{z-}$$

where M is selected from the transition metal block consisting of rhodium, cobalt, ruthenium, osmium, iridium, and iron; X is an anionic ligand selected from the group consisting of halide, hydride, and alkyl; n ranges from 1 to 12; m ranges from 1 to 34; p ranges from 0 to 2n+1; with the proviso that when n is 1, p is at least 1; and z is an integer charge ranging from 1 to 5; said anion becoming ionically bound to the anion exchange resin.

4,328,126
CATALYST FOR THE PRODUCTION OF MALEIC ANHYDRIDE BY THE OXIDATION OF BUTANE

Carl A. Udovich, Joliet, Ill., and Ralph J. Bertolacini, Chesterton, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 11, 1980, Ser. No. 139,232
Int. Cl.[3] B01J *23/06, 23/22, 27/18*
U.S. Cl. 252—435 **3 Claims**

1. A catalyst for the production of maleic anhydride by the oxidation of butane which consists essentially of a phosphorus-vanadium mixed oxide with zinc as the promoter, wherein vanadium pentoxide in the presence of zinc is reduced and subsequently the vanadium zinc oxide solution is reacted with phosphoric acid, the atomic ratio of vanadium to phosphorus being in the range of 0.5:1 to 1.25:1 and the total atomic ratio of zinc to vanadium being in the range of 0.01:1 to 0.25:1 wherein the catalyst in the initial phase has a characteristic initial powder X-ray diffraction pattern using copper K alpha radiation as follows:

	Line Position	
d angstrom	2.θ degrees	Intensity
5.7	15.6	100
4.5	19.7	41
3.7	24.3	25
3.3	27.1	32
3.1	28.8	14
2.9	30.5	40
2.8	32.2	9
2.7	33.7	20

which upon heating at a temperature of about 600° to 800° F. under reaction conditions for the oxidation of butane to maleic anhydride converts to a phase having a characteristic powder X-ray diffraction pattern using copper K alpha radiation as follows:

	Line Position	
d angstrom	2.θ degrees	Intensity
6.3	14.2	10
4.8	18.5	7
3.9	23.0	100
3.1	28.5	58
3.0	30.0	29
2.7	33.8	7

4,328,127
RESIDUA DEMETALATION/DESULFURIZATION CATALYST

Philip J. Angevine, West Deptford, and Stephen M. Oleck, Moorestown, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

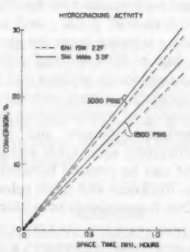
Filed Sep. 16, 1980, Ser. No. 187,685
Int. Cl.[3] B01J *21/04, 23/85, 27/04*
U.S. Cl. 252—439 **2 Claims**

1. In a hydrodemetalation-desulfurization catalyst comprising a hydrogenating component selected from the group of oxides or sulfides of at least one Group VI B or Group VIII metal composited with an alumina base which comprises theta and/or delta phase alumina and which composite has a surface area of 40–150 m^2/g, a pore volume of 0.45–1.50 cc/g, and has not less than about 60% of its pore volume in pores with diameters of about 100 A to about 200 A; wherein said hydrogenating component consists essentially of about 2 to about 10 wt.% cobalt and about 5 to about 20 wt.% molybdenum; the improvement which comprises providing a composite having about 40 to 75% of its pore volume in pores with diameters of about 150 A to about 200 A and up to about 5% of its pore volume in pores with diameters greater than about 500 A.

4,328,128
HYDROTREATING CATALYST AND MANUFACTURE THEREOF

John J. Stanulonis, Pittsburgh; Joseph A. Tabacek, New Kensington, and Roger F. Vogel, Butler, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 4, 1979, Ser. No. 72,240
The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.
Int. Cl.[3] B01J *37/00, 29/00;* **C10G** *45/00, 17/00*
U.S. Cl. 252—441 **19 Claims**



1. A process for the production of a fluorine-promoted hydrotreating catalyst, which consists essentially of contacting a refractory inorganic oxide support composed of between about 10 and about 75 weight percent silica with an impregnating solution, said solution consisting essentially of NH_4^+, Ni^{++}, Mo^{+VI} and F^- in amounts sufficient to produce a supported catalyst composite containing between about 2 and about 8 weight percent nickel, between about 8 and about 25 weight percent molybdenum and between about 1 and about 5 weight percent fluorine based upon the total catalyst composite, using the one-step, incipient wetness technique, said Ni^{++} and F^- being supplied from nickel fluoride, and heating said impregnating support to a temperature sufficient to drive off ammonia and deposit fluorine, nickel and molybdenum on said support.

4,328,129

CATALYST FOR MAKING DIMETHYL ETHER AND METHANOL FROM SYNTHESIS GAS

Yun-Yang Huang, Troy, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 14, 1979, Ser. No. 103,750
Int. Cl.[3] B01J *21/04, 23/64, 23/88*
U.S. Cl. 252—465 3 Claims

1. Catalyst composition for selectively converting gaseous mixtures of carbon monoxide and hydrogen to dimethyl ether and methanol, said catalyst consisting essentially of rhodium, molybdenum and iron supported on alumina.

4,328,130

SHAPED CHANNELED CATALYST

Chwan P. Kyan, Mantua, N.J., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 22, 1980, Ser. No. 199,121
Int. Cl.[3] B01J *35/02*
U.S. Cl. 252—477 R 9 Claims

1. A shaped catalyst composition having substantially the shape of a cylinder having a plurality of longitudinal channels extending radially from the circumference of the cylinder and defining protrusions therebetween, said protrusions having maximum widths greater than the maximum widths of said channels.

4,328,131

ELASTIC DETERGENT BAR OF IMPROVED ELEVATED TEMPERATURE STABILITY

John C. Carson, Jr., Manasquan Park, and James H. Bowers, Somerville, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 2, 1976, Ser. No. 746,871
Int. Cl.[3] C11D *1/18, 1/38, 17/00*
U.S. Cl. 252—542 19 Claims

1. A hand squeezable, elastic, solid molded detergent product of improved elevated temperature stability on storage consisting essentially of about 20 to 80% of a mixture of anionic and amphoteric synthetic organic detergents in a proportion between about 1:5 and 5:1, about 5 to 30% of gelatin, about 5 to 50% of water and sufficient gas in small bubbles distributed throughout such product so that the density thereof is in the range of 0.5 to 0.98 g./cc., said anionic synthetic organic detergent being selected from the group consisting of lower alkanolamine higher fatty alcohol sulfates, ammonium higher fatty acid monoglyceride sulfates and mixtures thereof and the amphoteric synthetic organic detergent being selected from the group consisting of imidazolinium betaines, iminodipropionates and aminopropionates and mixtures thereof, which product is sufficiently squeezable and elastic so that a 2 cm. thickness thereof can be pressed between the thumb and forefinger to a 1 cm. thickness and upon release of such pressure will return within five seconds to within 1 mm. of the 2 cm. thickness.

4,328,132

COLOR STABILIZATION OF FLAME RETARDANT

Charles W. Moberly, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 6, 1979, Ser. No. 17,883
Int. Cl.[3] C09D *5/18;* C09K *3/28;* C07D *251/70*
U.S. Cl. 252—606 21 Claims

1. A method for minimizing undesirable color formation during the preparation of a cured intumescent flame retardant prepared by combining and heating (a) at least one phosphorus oxide compound of the formula $(P_2O_5)_{0.5-1.0}(H_2O)_{0.0-1.5}$, (b) melamine, and (c) at least one saturated open chain polyol containing from 5 to 15 carbon atoms and from 4 to 8 hydroxyl groups, said method comprising, including among the reactants employed in preparing the intumescent flame retardant a color stabilizing amount of at least one color stabilizing inorganic metal compound selected from the group consisting of orthophosphites and hypophosphites of alkali metals, alkaline earth metals, or manganese; and sulfites and bisulfites of alkali metals.

11. A phosphorus-containing flame retardant which is prepared by combining and heating (a) at least one phosphorus oxide compound of the formula $(P_2O_5)_{0.5-1.0}(H_2O)_{0.0-1.5}$, (b) melamine, (c) at least one saturated open chain polyol containing from 5 to 15 carbon atoms and from 4 to 8 hydroxyl groups, and (d) a color stabilizing amount of at least one color stabilizing compound selected from the group consisting of orthophosphites and hypophosphites of alkali metals, alkaline earth metals, or manganese; and sulfites and bisulfites of alkali metals.

4,328,133

ORGANIC MICRO-FIBER REINFORCED RUBBER COMPOSITIONS

Masaki Ogawa, Sayama; Yasushi Hirata, Higashimurayama, and Mikihiko Ikegami, Tokorozawa, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jun. 23, 1981, Ser. No. 276,548
Claims priority, application Japan, Jun. 25, 1980, 55/85064; Aug. 4, 1980, 55/106355
Int. Cl.[3] C08L *69/00;* C08K *3/04;* C08L *7/00, 9/00*
U.S. Cl. 524—505 3 Claims

1. In organic micro-fiber reinforced rubber compositions in which 10–100 parts of weight of carbon black and 3–30 parts by weight of organic micro-fibers are incorporated based on 100 parts by weight of at least one rubber selected from a group consisting of natural rubber, synthetic polyisoprene rubber, butyl rubber, halogenated butyl rubber, polybutadiene rubber, styrene-butadiene copolymeric rubber, ethylene-propylene-diene ternary copolymeric rubber and acrylonitrile-butadiene copolymeric rubber, the improvement comprising using fibers having a glass transition temperature of amorphous portion of lower than 30° C. or higher or 120° C. and a melting point of crystal portion of higher than 160° C., and having an average length of the micro-fibers of 0.8–30 μm, an average diameter of the micro-fibers of 0.02–0.8 μm and a ratio of the average length of the micro-fibers to the average diameter of the micro-fibers of 8–400 as the organic micro-fibers.

4,328,134

ANOREXIGENIC PEPTIDES

Andrew V. Schally, 5025 Kawanee Ave., Metairie, La. 70002, and David H. Coy, 4319 Perrier St., New Orleans, La. 70115

Filed May 6, 1980, Ser. No. 147,112
Int. Cl.[3] C08L *37/00;* C07C *103/52*
U.S. Cl. 525—54.11 6 Claims

1. A peptide of the formula A-B-C and pharmaceutically acceptable salts thereof in which A is selected from the group consisting of L-pyroglutamyl, D-pyroglutamyl, and L-homopyroglutamyl; B is selected from the group consisting of L-histidyl, L-3′-methylhistidyl, D-histidyl, L-phenylalanyl, L-p-aminophenylalanyl, and L-β-(pyrazolyl-1)alanyl; and C is selected from the group consisting of glycine, glycinamide, glycine (lower alkyl)amides, glycine lower alkyl esters, 2-amino-1-hydroxyethyl, D-alanine, L-β-(2-thienyl)alanine, and NHR^1 in which R^1 is lower alkyl, with the proviso that C may not be glycine or glycinamide when A is L-pyroglutamyl and B is L-histidyl.

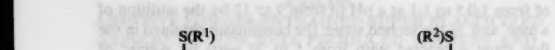
4,328,135

OCTAPEPTIDES LOWERING GROWTH HORMONE

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 159,327, Jun. 13, 1980, Pat. No. 4,282,143.
This application Feb. 12, 1981, Ser. No. 233,813
Int. Cl.[3] C08L *37/00*
U.S. Cl. 525—54.11 2 Claims

1. A compound which is



X_1 is Phe, D-Phe or $C_6H_5CH_2CH_2CO$—;
X_2 is Phe, Tyr, Trp, Met or Leu;
X_3 is Trp or D-Trp;
X_4 is Thr, Val, or Abu or Phe;
and
X_6 is Phe or D-Phe;
R is hydrogen or an alpha amino protecting group;
R^1 and R^2 are hydrogen or a sulfhydryl protecting group;
R^3 is hydrogen or a hydroxyl protecting group for Tyr;
R^4 is hydrogen or a N^ϵ protecting group for Lys;
R^5 is hydrogen or a hydroxyl protecting group for Thr and
R^6 is —CH_2 (polystyrene resin).

4,328,136

PROCESS FOR THE PRODUCTION OF CELLULOSE-SILICATE PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 221,432, Dec. 30, 1980, which is a continuation-in-part of Ser. No. 169,973, Jul. 18, 1980, Pat. No. 4,262,108, which is a continuation-in-part of Ser. No. 884,135, Mar. 7, 1978, Pat. No. 4,159,369, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1980, abandoned. This application Jun. 22, 1981, Ser. No. 275,827

Int. Cl.³ C08L *83/02*

U.S. Cl. 523—204 **20 Claims**

1. The process for the production of lignin-cellulose silicate products containing impregnated hydrated silica and binder by mixing and reacting the following components:

(a) 1 to 100 parts by weight of an oxidated silicate compound, selected from the group of oxidized alkaline earth metal silicate, oxidized mono alkali metal silicic acid, oxidized mono alkaline earth metal silicic acid, oxidized silicic acid and mixtures thereof;

(b) 50 parts by weight of plant cellulose particles, selected from the group consisting of cotton, wood cellulose, regenerated cellulose, sulfate cellulose produced by the Kraft process, sulfite cellulose, mechanical pulp cellulose, vegetable cellulose, cellulose esters and semichemical cellulose;

(c) a salt-forming compound selected from the group consisting of hydrochloric and sulfuric acid and in an amount wherein the mixture of components (a), (b) and (c) has a pH of 1.5 to 5 after the reaction is complete;

(d) then binder is added to the lignin-cellulose-silicate product impregnated with hydrated silica.

4,328,137

PROCESS FOR RAPIDLY BODYING ORGANOPOLYSILOXANE RESINS

George F. Medford, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,722

Int. Cl.³ C08L *91/00*

U.S. Cl. 525—474 **12 Claims**

1. A process for effecting the controlled rapid condensation of silanol radicals in a silanol-containing organopolysiloxane comprising the steps of:

adding to silanol-containing organopolysiloxane resin solids, 5 to 350 parts calculated as metal by weight of a silanol condensation catalyst per million parts resin solids wherein said silanol condensation catalyst is a stannous salt effective for rapidly bodying said organopolysiloxane resin;

heating said catalyzed silanol-containing organopolysiloxane resin to a temperature between 50° C. and 200° C. for an amount of time effective for increasing the molecular weight of said organopolysiloxane resin;

quenching said stannous metal catalyzed resin by reacting said silanol condensation catalyst with a metal soap catalyst wherein said metal soap catalyst is effective for quenching said stannous salt catalyst and is a relatively less effective silanol condensation catalyst than said stannous salt catalyst.

11. A process as in claim 1 wherein the metal of said metal soap catalyst is selected from the group consisting of calcium, zinc, manganese, cerium, zirconium, and cobalt and said soap is selected from the group consisting of octoates, stearates, and neodecanoates.

4,328,138

CURABLE N-ACYLUREA POLYMERS AND COATING COMPOSITIONS THEREFROM

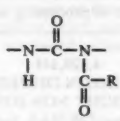
Shiow-Ching Lin, Columbia, Md., and Gerry K. Noren, Hoffman Estates, Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 4, 1980, Ser. No. 213,002

Int. Cl.³ C08G *18/68*; C08L *91/00*

U.S. Cl. 525—451 **4 Claims**

1. A curable coating composition comprising an organic polymer containing a plurality of groups of the structural formula:



wherein

comprises a polyethylenically unsaturated acyl group derived from a polyethylenically unsaturated monocarboxylic acid containing about 16 to about 22 carbon atoms and mixtures thereof, said groups being present at an average of about 2.5 to about 6 per polymer molecule; said polymer being dissolved in an inert organic solvent at about 70 percent to about 90 percent by weight of said composition, exclusive of pigment; said composition additionally comprising a drier salt present at about 0.1 percent to about 10 percent based upon the weight of said polymer and pigment.

4,328,139

FLAME RETARDANT FILLED POLYPROPYLENE COMPOSITIONS CONTAINING CARBON BLACK AND A CURED INTUMESCENT FLAME RETARDANT (IFR)

Donald M. Simons, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1980, Ser. No. 201,075

Int. Cl.³ C08K *5/34, 5/51, 3/04, 5/32*

U.S. Cl. 252—606 **7 Claims**

1. A filled propylene polymer composition consisting essentially of:

(1) 100 parts of a propylene polymer selected from the class consisting of stereoregular homopolypropylene, propylene/ethylene block copolymers containing about 10–30 weight percent ethylene and 70–90 weight percent propylene, and blends of these polymers with each other and with an EPM or EPDM elastomer having an ethylene content of about 50–65 weight percent and a Mooney viscosity of about 35–80;

(2) about 30–50 parts of intumescent fire retardant (IFR)

comprising the reaction product of a phosphorus oxide of the formula $P_2O_5xH_2O$, wherein x is a number having a value of 0 to 3; a saturated acyclic polyol having from 5 to 15 carbon atoms and from 4 to 8 hydroxyl groups per molecule; a nitrogen compound selected from the group consisting of melamine, dicyandiamide, urea and dimethylurea; and, optionally, a color improving compound of the formula $R—Y_z$ having from 2 to 24 carbon atoms per molecule, wherein Y is selected from the group consisting of —OH, —COOH, and —NR'_2; z is a number having a value of 1 or 2, R is a hydrocarbyl radical having a valence of z selected from the group consisting of alkyl, cycloalkyl and alkoxy, and R' is —H or —R; which reaction product is thereafter cured by heating.

(3) about 10–50 parts of carbon black selected from the group consisting of channel blacks, furnace blacks, and thermal blacks.

4,328,140

FLUOROELASTOMER PROCESSING AID

Michael P. Singletary, Goose City, and James L. Fabian, North Charleston, both of S.C., assignors to Raybestos-Manhattan, Inc., Trumbull, Conn.

Filed Oct. 3, 1980, Ser. No. 193,751

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—322 2 Claims

1. Copolymers of vinylidene fluoride and hexafluoropropylene containing oleic acid and low molecular weight polyethylene in effective amounts as processing aids.

4,328,141

STABILIZATION OF ROSIN DISPERSIONS WITH LOW MOLECULAR WEIGHT NON-IONIC POLYMERS

John P. Farewell, and David W. Lipp, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 2, 1981, Ser. No. 250,477

Int. Cl.³ C08L *93/00, 33/62;* C08F *120/56;* D21H *3/38*

U.S. Cl. 524—272 20 Claims

1. A rosin dispersion consisting essentially of a paper sizing rosin as dispersed phase in an aqueous medium as continuous phase, said medium having incorporated therein a stabilizingly effective amount of a non-ionic copolymer of acrylamide and a hydrophobic monomer selected from the group consisting of styrene, alkyl (C_4–C_{24}) substituted acrylamides and ethylene, wherein the molecular weight of the copolymer is such that the viscosity for a 10% solution thereof is about 30 to 100 centipoises.

15. A method of stabilizing an aqueous dispersion of paper sizing rosin comprising incorporating therein an effective stabilizing amount of a non-ionic copolymer of acrylamide and a hydrophobic monomer selected from the group consisting of styrene, alkyl (C_4–C_{24}) substituted acrylamide and ethylene, wherein the molecular weight of the copolymer is such that the viscosity for a 10% solution thereof is about 30 to 100 centipoises.

4,328,142

PREPARATION OF WATER-SOLUBLE CONDENSATES AND THEIR USE AS CROSSLINKING AGENTS FOR THE PREPARATION OF PAPERMAKING AIDS

Otto Hertel; Emil Scharf, and Jaroslav Melzer, all of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 15, 1981, Ser. No. 225,241

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003648

Int. Cl.³ C08L *63/00*

U.S. Cl. 523—417 3 Claims

1. A process for the preparation of water-soluble condensates, wherein di-secondary diamines are reacted with epichlorohydrin and/or dichlorohydrin in an aqueous reaction, in which, in the first stage, di-secondary diamines are condensed with epichlorohydrin and/or dichlorohydrin in a molar ratio of from 1:0.5 to 1:1 at a pH of from 9 to 12 by the addition of a base, and, in the second stage, the condensate obtained in the first stage is reacted with from 1 to 70 parts by weight of epichlorohydrin and/or dichlorohydrin, per 100 parts by weight of the condensate from the first stage, at a pH of from 4 to 8.5, wherein the product obtained in the second stage is reacted with a polyamine, polyamidoamine, ethyleneimine-modified polyamidoamine or polyether-amine in aqueous solution at up to 200° C., to form a water-soluble resin.

4,328,143

AQUEOUS COATING COMPOSITION

Minao Izumi; Tamotsu Sobata; Shinichi Ishikura, and Keizou Ishii, all of Osaka, Japan, assignors to Nippon Paint Company, Ltd., Osaka, Japan

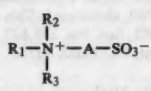
Filed Oct. 31, 1980, Ser. No. 202,765

Claims priority, application Japan, Oct. 31, 1979, 54-141746; Oct. 31, 1979, 54-141747

Int. Cl.³ C08L *61/20*

U.S. Cl. 523—412 7 Claims

1. An aqueous coating composition for formation of a coating film having high corrosion-resistance on a metal substrate which comprises (a) a film-forming polymeric material having at least one hydroxyl group and/or at least one carboxyl group, (b) a zwitter-ion compound and (c) an aminoplast resin and/or an epoxy resin, wherein said zwitter-ion compound (b) is a hydroxyl group-containing aminosulfonic acid compound of the formula:



wherein R_1 is a C_1–C_{20} alkyl group having at least one hydroxyl group, R_2 and R_3 are each a hydrogen atom or a C_1–C_{20} alkyl group having optionally at least one hydroxyl group or, when linked together, they represent a C_2–C_7 alkylene group having optionally at least one hydroxyl group, or either one of R_2 and R_3 represents a C_1–C_6 straight or branched alkyl group having a sulfonic group or a substituted or unsubstituted phenyl group, and A is a straight or branched C_1–C_6 alkylene group or a substituted or unsubstituted phenylene group.

4,328,144

ROOM TEMPERATURE CURE LATICES

James T. K. Woo, Medina, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 131,166

Int. Cl.³ C08L *33/08, 33/10, 61/00, 75/04*

U.S. Cl. 523—408 7 Claims

1. In a process for producing aqueous coating composition adapted to cure at low temperatures proximate to room temperatures containing water-dispersed polymers the improved process steps comprising:

providing a ketimine ethylenically unsaturated monomer containing blocked amine groups;

copolymerizing said ketimine ethylenically unsaturated monomer with ethylenically unsaturated monomers in an emulsion process at a pH greater than a pH of 7.2 to produce a stabilized blocked ketimine polymer containing blocked amine groups;

mixing said blocked ketimine polymer with a reactive matrix polymer to provide a thermosetting polymer mixture adapted to cross-link upon adjusting the pH of said polymer mixture below about 7, whereby the blocked amine groups on said blocked ketimine polymer become unblocked and cross-link with said matrix polymer to provide a cured surface coating.

4,328,145

ADDITIVE FOR AIR-ENTRAINED SUPER PLASTICIZED CONCRETE, CONCRETE PRODUCED THEREBY AND METHOD OF PRODUCING AIR-ENTRAINED SUPER PLASTICIZED CONCRETE

Gregory S. Bobrowski, Park Ridge, and James D. Connolly, Mt. Prospect, both of Ill., assignors to American Admixtures and Chemicals Corporation, Chicago, Ill.

Filed Oct. 26, 1979, Ser. No. 88,350
Int. Cl.[3] C08L *61/28;* C04B *15/00*
U.S. Cl. 524—6 6 Claims

1. In the method of preparing an air entrained, super plasticized concrete having a bubble spacing factor of a maximum of 0.008 in. as defined by ASTM standard C457 the steps of

adding an air entraining agent during the mixing cycle of the aggregates and water,

adding a small but effective quantity of a potassium salt of a fluorinated alkyl carboxylate characterized by high surface activity and a pH of 8–9 during the mixing cycle of the aggregates and water, and

adding a super plasticizer to the mix at the time sufficiently close to placement of the mix that the super plasticizer will retain its effectivness during placement.

4,328,146

METHOD FOR IMPROVING CHARACTERISTICS OF POLYMETHYLPENTENE THROUGH ADDITION OF COATED MICA PARTICLES

Robert Andy, 60 Park Ter., Washington, Pa. 15301

Filed Sep. 24, 1979, Ser. No. 78,221
Int. Cl.[3] B32B *19/02;* C08K *9/04*
U.S. Cl. 523—216 2 Claims

1. A composition of polymethylpentene including particles of mica coated with a binder and comprising about 10% to 60% by volume of binder-coated mica.

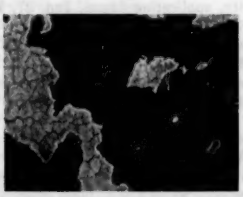
2. A product as recited in claim 1 wherein said binder is chlorinated paraffin wax and wherein said wax comprises, by volume, about 2% of the mica particles.

4,328,147

ROOFING ASPHALT FORMULATION

Irving B. Chang, Morristown, and Robert E. Beckwith, Jr., Bernardsville, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 30, 1980, Ser. No. 202,206
Int. Cl.[3] C08L *95/00*
U.S. Cl. 524—59 14 Claims



1. A filled asphaltic composition comprising: about 40 percent to about 99 percent by weight of an asphaltic composition comprising, about 52 to about 99 percent oxidized asphalt, about 1 to about 8 percent by weight of oxidized polyethylene, and 0 to about 40 percent by weight of saturant; and about 1 percent to about 60 percent by weight of stone dust.

4,328,148

COMPOSITIONS COMPRISING WATER AND HYDROPHILIC POLYMERS AND CONTACT LENSES THEREFROM

Petr Kuzma, 1708 Westminster Blvd., Parlin, N.J. 08859

Division of Ser. No. 61,466, Jul. 29, 1979, Pat. No. 4,275,183. This application Dec. 15, 1980, Ser. No. 216,434
Int. Cl.[3] C08L *33/14*
U.S. Cl. 524—555 5 Claims

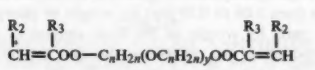
1. A composition containing water and a hydrophilic water swellable, water insoluble copolyme of at least one monomer from each of the following four subclasses:

(1) at least 35% hydroxy (C_2–C_4 alkyl) acrylate, methacrylate or crotonate,

(2) 30 to 60% of acrylamide, methacrylamide, or crotonamide or N,N-di(C_1–C_6-alkyl) acrylamide, methacrylamide or crotonamide,

(3) 5 to 20% R —OR_1—$_x$Z wherein R is C_1–C_6 alkyl, wherein R_1 is C_2–C_4 alkylene, wherein x is an integer from 1 to 4 and wherein Z is acryloyloxy, methacrylolyloxy or crotonoyloxy,

(4) 0.3 to 5% of a polyethylenically unsaturated crosslinking agent having the formula



where R_2 and R_3 are hydrogen or lower alkyl, n is an integer of 2 to 4 and y is an integer of 2 to 9, said copolymer containing 58 to 80 weight % of water based on the total of water plus dry polymer.

4,328,149

POLYMERIZATION METHOD UTILIZING A THREE-PHASE EMULSION SYSTEM

Lewis D. Morse, Pittsburgh, and Kenneth W. Dixon, Thornton, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 116,862, Jan. 30, 1980, abandoned. This application Dec. 29, 1980, Ser. No. 218,864
Int. Cl.[3] C08F *2/16, 2/00;* C08G *18/00, 2/00*
U.S. Cl. 524—458 15 Claims

1. A method of polymerization utilizing a water/oil/water system, comprising the steps of

(a) adding to the innermost water phase the monomer material to be polymerized;

(b) adding, with mechanical agitation, the product of Step (a) to the middle oil phase, said oil phase containing from 0.01 to 40 percent by weight, based on the weight of said oil phase, of a surfactant having an HLB of from 2 to 5, whereby a water-in-oil emulsion of the innermost and middle phases is formed; and

(c) adding, with mechanical agitation, the emulsion product of Step (b) to the outermost water phase, said water phase containing from 0.01 to 10 percent by weight, based on the weight of said water phase, of at least one member selected from the group consisting of surfactants having an HLB of at least 8 and protective colloids, wherein polymerization proceeds in the innermost water phase until complete.

8. A method of polymerization utilizing an oil/water/oil system, comprising the steps of

(a) adding to the innermost oil phase the monomer material to be polymerized;

(b) adding, with mechanical agitation, the product of Step (a) to the middle water phase, said water phase containing from 0.01 to 10 percent by weight based on the weight of said water phase, of a surfactant having an HLB of at least 8, whereby an oil-in-water emulsion of the innermost and middle phases is formed; and

(c) adding, with mechanical agitation, the emulsion product of Step (b) to the outermost oil phase, said oil phase containing from 0.01 to 40 percent by weight, based on the

weight of said oil phase, of a surfactant having an HLB of from 2 to 5, wherein polymerization proceeds in the innermost oil phase until complete.

4,328,150

CURABLE EPOXY RESIN COMPOSITIONS

Kiyohiro Kondow; Tetuo Yoshida, and Yuki Tateyama, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1981, Ser. No. 243,251
Claims priority, application Japan, Mar. 17, 1980, 55-33602
Int. Cl.³ C08L *63/00*
U.S. Cl. 523—400 5 Claims

1. A curable epoxy resin composition which comprises

(a) an epoxy compound having at least two epoxy groups per molecule,

(b) a novolac-type phenolic resin in an amount sufficient to give from 0.5 to 4.0 moles of the phenolic hydroxy groups per mole of the epoxy groups in the epoxy compound as the component (a),

(c) an organophosphine compound in an amount sufficient to give from 0.04 to 0.50 part by weight of phosphorus per 100 parts by weight of the total amount of the epoxy compound as the component (a) and the novolac-type phenolic resin as the component (b), and

(d) an inorganic filler in an amount from 50 to 500 parts by weight per 100 parts by weight of the total amount of the epoxy compound as the component (a) and the novolac-type phenolic resin as the component (b).

4,328,151

COATED CARBON FIBER REINFORCED POLY(VINYLIDENE FLUORIDE)

Donald N. Robinson, Collegeville, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 3, 1981, Ser. No. 250,827
Int. Cl.³ C08K *3/04, 7/06*
U.S. Cl. 523—205 13 Claims

1. A low shrinkage, strong, acid stable, reinforced poly(vinylidene fluoride) composition comprising a poly(vinylidene fluoride) resin mixed with carbon fibers which have been precoated with poly(vinylidene fluoride) wherein the carbon fiber length is from about 3 to 15 mm, the carbon fibers are precoated with at least about 3 percent by weight of poly(vinylidene fluoride) and the precoated carbon fibers are present in an amount of from about 5 to 20 parts by weight of the composition.

4,328,152

POLYVINYL CHLORIDE POLYMER COMPOSITIONS CONTAINING TRIZINC DIMOLYBDATE MONOHYDRATE AND ZINC PHOSPHITE FOR SMOKE SUPPRESSION

George A. Tsigdinos; Thomas R. Weber, both of Ann Arbor, and Fred W. Moore, Plymouth, all of Mich., assignors to Amax Inc., Greenwich, Conn.

Filed Dec. 16, 1980, Ser. No. 216,894
Int. Cl.³ C08K *3/32, 3/22*
U.S. Cl. 524—406 7 Claims

1. A smoke suppressed, rigid or plasticized polyvinyl chloride polymer composition consisting essentially of a polyvinyl chloride polymer, and a small but effective amount of a smoke suppressant essentially free of ZnO and consisting essentially of a mixture of $Zn_3Mo_2O_9.H_2O$ and $ZnHPO_3$, in an atomic ratio of Mo to P of about 0.5:1 to about 2.0:1, to impart smoke suppression to the polymer composition.

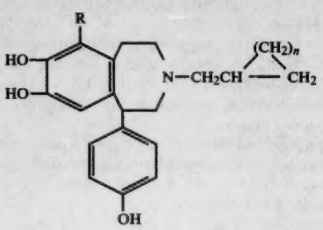
4,328,153

DOPAMINERGIC BENZAZEPINES

L. Martin Brenner, Havertown, Pa., assignor to Smith Kline Corporation, Philadelphia, Pa.

Filed Jul. 17, 1980, Ser. No. 169,696
Int. Cl.³ C07D *223/16;* A61K *31/55*
U.S. Cl. 260—239 BB 4 Claims

1. A compound of the structure



in which R is halo and n is 1, one of its tri-O-lower alkanoyl esters or one of its pharmaceutically acceptable acid addition salts.

4,328,154

PROCESS FOR THE PURIFICATION OF RAW CAPROLACTAM

Paolo Senni; Mario Catoni, both of Colleferro, and Domenico Astarita, Segni, all of Italy, assignors to SNIA Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Italy

Filed Nov. 3, 1980, Ser. No. 203,367
Int. Cl.³ C07D *201/16*
U.S. Cl. 260—239.3 A 9 Claims

1. In a process for the purification of raw caprolactam obtained by extraction with alkylated phenols from a sulphuric acid solution thereof, re-extraction with water, oxidation treatment, evaporation of the water and subsequent vacuum distillation, the improvement wherein before the oxidation treatment, a "fast distillation", in the presence of an alkaline compound, is employed.

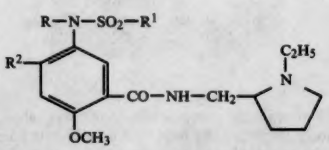
4,328,155

META-SULFONAMIDO-BENZAMIDES

Ogata Masaru, Kobe, and Matsumoto Hiroshi, Takatsuki, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 872,584, Jan. 26, 1978. This application Feb. 26, 1980, Ser. No. 124,727
Claims priority, application Japan, Jan. 27, 1977, 52-8443; Aug. 8, 1977, 52-94884
Int. Cl.³ C07D *207/09;* A61K *31/40*
U.S. Cl. 548—567 4 Claims

1. A compound selected from the group consisting of a compound of the formula



wherein R is methyl or cyano, R^1 is methyl or ethyl, and R^2 is hydrogen, methyl or chlorine, and

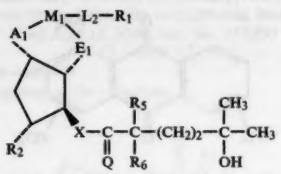
a pharmaceutically acceptable acid addition salt thereof.

4,328,156
19-HYDROXY-19-METHYL-7α-HOMO-PGI$_1$ COMPOUNDS

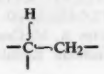
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507.
This application Mar. 3, 1980, Ser. No. 126,512
Int. Cl.^{3} C07D *311/02*
U.S. Cl. 549—396 3 Claims

1. A prostacyclin-type compound of the formula



wherein A_1 is —O— (oxa) and E_1 is —CH_2CH_2—;
wherein L_2 is
(1) —$(CH_2)_q$—CF_2—, wherein q is one, 2, or 3; or
(2) —CH=CH—;
wherein M_1 is



wherein Q is oxo, α—H:β—H, α—OH:β—R_4, or α—R_4:β—OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_1 is
(1) —$COOR_3$,
(2) —CH_2OH,
(3) —$CH_2N(R_7)(R_8)$,
(4) —$CO—N(R_7)(R_8)$,
(5) —$CO—NH—SO_2—R_{15}$, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(Ph)—$CO—CH_3$,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—$CO—CH_3$,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—$CO—CH_3$,
(k) —(p—Ph)—NH—$CO—NH_2$,
(l) —(p—Ph)—CH=N—NH—$CO—NH_2$,
(m) β-naphthyl,
(n) —$CH_2—CO—R_{16}$,
wherein — (Ph)— is inter-phenylene and —(p—PH) is inter-para-phenylene or para-phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive, wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—.

4,328,157
PRODUCTION OF MALEIC ANHYDRIDE

Robert A. Innes, and Anthony J. Perrotta, both of Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 19, 1981, Ser. No. 245,255
Int. Cl.^{3} C07D *307/60*
U.S. Cl. 549—258 23 Claims

1. A process for preparing maleic anhydride which comprises passing a vapor mixture containing at least one C_4 to C_{12} hydrocarbon and molecular oxygen over a catalyst comprising a cobalt niobate-promoted vanadium molybdate under reaction conditions to obtain a mixture containing maleic anhydride.

4,328,158
PRODUCTION OF MALEIC ANHYDRIDE

Robert A. Innes, and Anthony J. Perrotta, both of Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 19, 1981, Ser. No. 245,323
Int. Cl.^{3} C07D *307/60*
U.S. Cl. 54—258 23 Claims

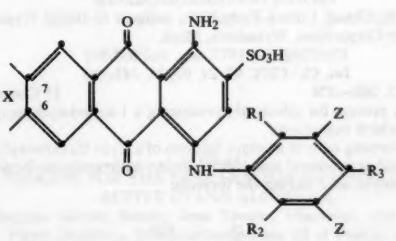
1. A process for preparing maleic anhydride which comprises passing a vapor mixture containing at least one C_4 to C_{12} hydrocarbon and molecular oxygen over a catalyst comprising a cobalt tantalate promoted vanadium molybdate under reaction conditions to obtain a mixture containing maleic anhydride.

4,328,159
ANTHRAQUINONE COMPOUNDS AND MIXTURES THEREOF

Jean-Marie Adam, St. Louis, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 21, 1979, Ser. No. 41,278
Claims priority, application Switzerland, Jun. 2, 1978, 6075/78
Int. Cl.^{3} C07C *143/665*
U.S. Cl. 260—374 10 Claims

1. Anthraquinone compounds, and mixtures thereof, of the formula I



(I)

wherein
X is a halogen atom which is in the 6- or 7-position of the anthraquinone molecule, R_1 and R_2 independently of one another are each an alkyl group, R_3 is hydrogen or an alkyl group, one Z is the group —$CH_2—NH—CO—Y$ in which Y is an alkyl or alkenyl group which is unsubstituted or is mono- or disubstituted by halogen or an unsub-

stituted or substituted phenyl group, the other Z is hydrogen or —CH_2—NH—CO—Y.

4,328,160

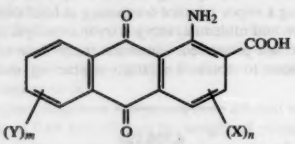
PROCESS FOR THE PREPARATION OF 1-AMINOANTHRAQUINONES

Rack H. Chung, Clifton Park, N.Y., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Sep. 20, 1977, Ser. No. 834,992
Int. Cl.³ C07C *97/24, 97/26, 143/665*
U.S. Cl. 260—378 **10 Claims**

1. A process for selectively producing a 1-amino anthraquinone which comprises:

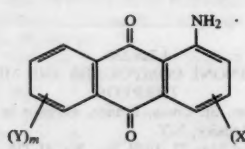
(a) forming a basic aqueous solution of ammonium hydroxide or an alkali metal hydroxide and an 1-aminoanthraquinone-2-carboxylic acid having the formula:



wherein X is hydroxy, alkoxy of from 1 to 4 carbon atoms, halo, amino or —SO_3H; Y is hydroxy, alkoxy of from 1 to 4 carbon atoms, halo, amino or —SO_3H; and m and n independently represent a value of from 0 to 2;

(b) contacting the resulting basic solution from (a) with between about 0.1 mole and about 0.5 moles of elemental zinc, tin or iron metal as the catalyst, per mole of 1-aminoanthraquinone-2-carboxylic acid at an elevated temperature to effect decarboxylation; and

(c) recovering the corresponding product of the process having the formula:



wherein the substituents X and Y and subscripts m and n are the same as defined above.

4,328,161

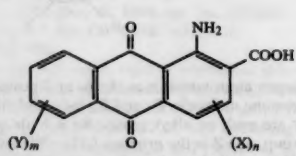
PROCESS FOR THE PREPARATION OF 1-AMINOANTHRAQUINONES

Rack H. Chung, Clifton Park, N.Y., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Sep. 20, 1977, Ser. No. 834,993
Int. Cl.³ C07C *97/24, 97/26, 143/665*
U.S. Cl. 260—378 **11 Claims**

1. A process for selectively producing a 1-amino-anthraquinone which comprises:

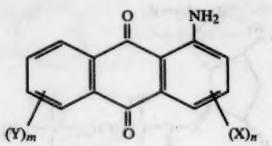
(a) forming an acid aqueous medium of a C_1 to C_4 carboxylic acid or a mineral acid and a 1-amino-anthraquinone-2-carboxylic acid having the formula:



wherein X is hydroxy, alkoxy of from 1 to 4 carbon atoms, halo, amino or —SO_3H; Y is hydroxy, alkoxy of from 1 to 4 carbon atoms, halo, amino or —SO_3H; and m and n independently represent a value of from 0 to 2;

(b) contacting the resulting acid medium from (a) with between about 0.1 mole and about 0.5 moles of elemental iron, tin or zinc metal as the catalyst, per mole of 1-aminoanthraquinone-2-carboxylic acid at an elevated temperature to effect decarboxylation; and

(c) recovering the corresponding product of the process having formula:



wherein the substituents X and Y and subscripts m and n are the same as defined above.

4,328,162

PROCESS FOR PREPARING 9,11-UNSATURATED STEROIDAL COMPOUND FROM THE CORRESPONDING SATURATED STEROIDAL COMPOUND

John A. Hyatt, and Charles A. McCombs, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,552
Int. Cl.³ C07J *5/00*
U.S. Cl. 260—397.45 **9 Claims**

1. Process for preparing 9,11-unsaturated steroidal compounds from the corresponding saturated 3α- or 17α-hydroxy steroidal compounds which comprises reacting the hydroxyl group of said saturated steroidal compound with a meta-iodobenzoic acid derivative to form a 3α- or 17α-m-iodobenzoate ester, irradiating said 3α- or 17α-m-iodobenzoate ester in the presence of an alkyl-m-iodobenzoate dichloride to form the corresponding 9α-chloro steroid ester, and dehydrochlorinating said 9α-chlorosteroid ester to prepare the 9,11 unsaturated steroidal compound.

4,328,163

PROCESS FOR THE PREPARATION OF SECONDARY AND TERTIARY 2-CARBOXYETHYL- AND CARBOXYMETHYLPHOSPHINES AND THEIR SALTS, AS WELL AS THE USE THEREOF

Peter Hänssle, Haltern, Fed. Rep. of Germany, assignor to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Jan. 17, 1980, Ser. No. 112,687
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1979, 2902203
Int. Cl.³ C07F *15/04*
U.S. Cl. 260—439 R **5 Claims**

1. In a nickel-containing catalyst for the oligomerization of ethylene wherein Ni is bonded to (a) a phosphine ligand and also to (b) up to two other ligands which are a different phosphine, a phosphite, a phosphino alkylene, an arsine, a stibine, a bismuthine or an olefinically unsaturated compound of 2–20 carbon atoms, containing up to four olefinically unsaturated linkages and up to 3 carbocyclic rings,

the improvement wherein said ligand (a) is a tertiary 2-carboxyethyl- or carboxymethylphosphine, of the formula

$$P(CH_2—CH_2—COOMe)_3 \text{ or } R''P(CH_2—COOMe)_2$$

wherein

Me is hydrogen, an alkali metal or NR'_4 wherein R' is hydrogen, $C_{1\text{-}10}$ alkyl or $C_{6\text{-}14}$ aryl, and

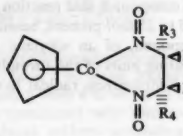
R" is C_{6-14} aryl.

4,328,164
COBALT ALKYLNITROSO COMPLEXES AND METHODS THEREWITH

Robert G. Bergman, Kensington; Paul N. Becker, Berkeley, both of Calif., and Mary A. White, Schenectady, N.Y., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 12, 1980, Ser. No. 177,495
Int. Cl.³ C07F *15/06*
U.S. Cl. 260—439 CY **2 Claims**

1. A compound of the structure



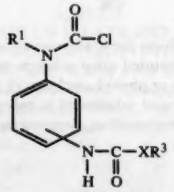
wherein R_1 is phenyl, hydrogen or alkyl, R_2 is phenyl, hydrogen or alkyl, R_3 is phenyl, hydrogen or alkyl and R_4 is phenyl, hydrogen or alkyl, and at least one of R_1, R_2, R_3 and R_4 is phenyl or alkyl.

4,328,165
PENYLCARBAMIC ACID CHLORIDES AND THEIR PREPARATION

Ulrich Schirmer, Heidelberg, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 12, 1980, Ser. No. 120,939
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2909198
Int. Cl.³ C07C *83/10, 155/02, 125/06, 121/52*
U.S. Cl. 260—453 RW **7 Claims**

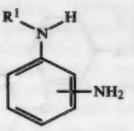
1. A process for the preparation of a phenylcarbamic acid chloride of the formula I



(I)

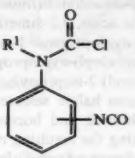
where X is oxygen or

R^1 is an alkyl or chloroalkyl each of 1 to 7 carbon atoms, R^3 and R^4 may be identical or different and each is alkyl or chloroalkyl of 1 to 7 carbon atoms, cyanoalkyl of 2 to 7 carbon atoms, cyclohexyl, benzyl or phenyl which is unsubstituted or substituted by fluorine or chlorine, R^4 may also be hydrogen or alkoxy of 1 to 4 carbon atoms, wherein an N-monosubstituted phenylenediamine of the formula II



(II)

where R^1 has the above meanings, is reacted, in a first step, with an excess of phosgene at from −30° C. to +200° C. and the resulting isocyanatophenylcarbamic acid chloride of the formula III



(III)

where R^1 has the above meanings, is reacted in the second step, without prior isolation, with a compound of the formula IV

(IV)

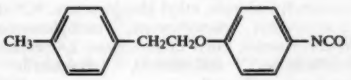
where R^3 and X have the above meanings.

4,328,166
PRODUCTION OF SUBSTITUTED PHENYLUREA

Fumio Fujita, Ibaraki; Hiroshi Kishida, Takarazuka; Nobushige Itaya, Nishinomiya, and Ichiki Takemoto, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 13,610, Feb. 21, 1979, Pat. No. 4,263,219. This application Nov. 21, 1980, Ser. No. 209,065
Claims priority, application Japan, Feb. 21, 1978, 53-19312; Feb. 21, 1978, 53-19313; Feb. 22, 1978, 53-20288; Feb. 22, 1978, 53-20289; Feb. 23, 1978, 53-20493; Feb. 24, 1978, 53-21219; Feb. 24, 1978, 53-21220; Feb. 24, 1978, 53-21221; Apr. 25, 1978, 53-49659
Int. Cl.³ C07C *103/22, 103/26, 119/048, 79/36*
U.S. Cl. 260—453 AR **5 Claims**

1. A compound of the formula:

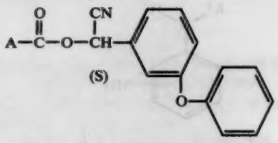


4,328,167
PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE CYANO ALCOHOLS

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre DeMoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jun. 2, 1980, Ser. No. 155,753
Claims priority, application France, Jun. 12, 1979, 79 14977
Int. Cl.³ C07C *121/75*
U.S. Cl. 260—465 F **10 Claims**

10. A process for the preparation of (S) α-cyano-3-phenoxy-benzyl alcohol comprising reacting an ester of (S) α-cyano-3-phenoxy-benzyl alcohol of the formula



wherein A is selected from the group consisting of 2,2-dimethyl-3-(2,2-dibromovinyl)-cyclopropane-1-carboxylic acids, 2,2-dimethyl-3-(2,2-dichlorovinyl)-cyclopropane-1-carboxylic acids, 2,2-dimethyl-3-(cyclobutylidenemethyl)-cyclopropane-1-carboxylic acids, 2,2-dimethyl-3-(fluorenylidene-methyl)-cyclopropane-1-carboxylic acids, 2,2-dimethyl-3-(2-oxo-3-oxacyclopentylidenemethyl)-cyclopropane-1-carboxylic acids, 2,2-dimethyl-3-(2,2-difluorovinyl)-cyclopropane-1-carboxylic acids and 2-(3-chlorophenyl)-2-isopropylacetic acids with at least two moles of a boron halide selected from the group consisting of boron trichloride and boron tribromide in an organic solvent and reacting the resulting mixture with water to obtain (S) α-cyano-3-phenoxy-benzyl alcohol.

4,328,168

PROCESS FOR THE PREPARATION OF VINYLCYCLOPROPANE DERIVATIVES

Richard G. Fayter, Jr., Fairfield, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed Oct. 27, 1980, Ser. No. 200,749

Int. Cl.³ C07C *121/48, 49/533, 69/743, 103/19*

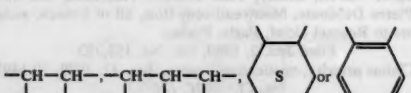
U.S. Cl. 260—465 K **10 Claims**

9. A process for the preparation of vinylcyclopropane compounds which comprises reacting in a fluid state with agitation at a temperature between 5° C. and 130° C.

(a) an unsaturated halogenated olefin selected from the group consisting of 1,4-dichlorobutene-2, 1,4-dibromobutene-2, 1-bromo-4-chlorobutene-2, 1,4-dichloro-2-methylbutene-2, 1,4-dibromo-2-methylbutene-2, 1,4-dichloro-2,3-dimethylbutene-2, 1,4-dibromo-2,3-dimethylbutene-2, 1,4-dichloropentene-2, 1,4-dibromopentene-2, 1,4-dichloro-4-methylpentene-2, 1,4-dibromo-4-methylpentene-2, 2,5-dichlorohexene-3, 2,5-dibromohexene-3, 2,5-dichloro-2-methylhexene-3, 2,5-dibromo-2-methylhexene-3, 2,5-dichloro-2,5-dimethylhexene-3, and 2,5-dibromo-2,5-dimethylhexene-3;

(b) an activated methylene compound selected from the group consisting of dimethyl malonate, diethyl malonate, dibutyl malonate, diisopropyl malonate, ethyl (N,N-dimethyl-2-aminoethyl) malonate, di(N,N-dimethyl-2-aminoethyl) malonate, ethyl phenylacetate, N,N-dimethyl-2-aminoethyl phenylacetate, methylacaetoacetate, ethylacetoacetate, ethyl cyanoacetate, 2,4-pentanedione, phenylacetone, malonamide, malonitrile and phenylacetonitrile; and

(c) a hydroxide of lithium, sodium or potassium; the mol ratio of (a) to (b) ranging from 1.05:1 to 1.5:1 with about 20% molar excess (c); said reaction conducted in the presence of 0.1 to 10 mol percent, based on (b), of a cyclic polyether having from 4 to 16 repeating units of the formula —O-A— where A is a bivalent hydrocarbon radical selected from the group



where r_1, r_2, r_3, $r_4$and r_5 are hydrogen or a C_{1-4} alkyl radical.

4,328,169

PROCESS FOR THE PREPARATION OF VINYLCYCLOPROPANE DERIVATIVES

Allen L. Hall, Amelia, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed Oct. 27, 1980, Ser. No. 200,750

Int. Cl.³ C07C *121/48, 49/533, 69/743, 103/19*

U.S. Cl. 260—465 K **9 Claims**

1. A process for the preparation of vinylcyclopropane compounds which comprises reacting in a fluid state with agitation and at a temperature between 1° C. and 200° C.:

(a) an alkylating agent having from 4 to 26 carbon atoms and a single carbon-carbon double bond and substituted with two groups capable of being nucleophically displaced;

(b) an activated methylene compound having one or two electron withdrawing groups covalently bonded to the methylene group; and

(c) an alkali metal compound; said reaction conducted in the presence of 0.05 to 25 mol percent, based on the activated methylene compound, of an alkylene oxide derivative containing repeating units of the formula —RO— where R is a bivalent hydrocarbon radical having from 2 to 8 carbon atoms.

4,328,170

PROCESS FOR PREPARING AN α-CYANOACRYLATE

Makoto Okawara, Tokyo; Yukihisa Takaoka, Ushiku; Makoto Kameyama, Chiba, and Iwakichi Sugiyama, Narashino, all of Japan, assignors to Matsumoto Seiyaku Kogyo Kabushiki Kaisha, Ichikawa, Japan

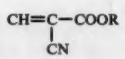
Filed Oct. 25, 1979, Ser. No. 87,970

Claims priority, application Japan, Nov. 2, 1978, 53-134602; Sep. 12, 1979, 54-116166

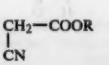
Int. Cl.³ C07C *120/00, 121/30, 121/46, 121/52*

U.S. Cl. 260—465.4 **8 Claims**

1. In a process for preparing an α-cyanoacrylate of the formula



wherein R is selected from the group consisting of alkyl of 1 to 10 carbon atoms, substituted alkyl wherein said substituent is lower alkoxy, halogen or phenyl; cyclohexyl; phenyl or substituted phenyl wherein said substituent is halogen, which comprises reacting the corresponding cyanoacetate of the formula



wherein R is as defined above, with formaldehyde at a molar ratio of about 1:1, in a solvent in the presence of a catalyst, wherein the improvement resides in said solvent being a mixture of water and an organic solvent which is immiscible with water and nonreactive to an alkaline substance, and said catalyst is a combination of (1) a first compound selected from the group consisting of onium compounds, macrocylic polyethers, and nonionic surface active agents, and (2) a second compound selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, alkaline earth metal hydroxides, alkaline earth metal carbonates, and mixtures thereof.

4,328,171

PREPARATION OF CYANOACETAMIDE AND 2,2-DIBROMO-3-NITRILOPROPIONAMIDE COMPOSITIONS

George A. Burk, Bay City; Brian G. Witt; Kurt W. Swogger, both of Midland, all of Mich., and Charles A. Wilson, Pittsburg, Calif., assignors to The Dow Chemical Company, Midland, Mich.

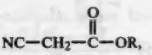
Filed Nov. 26, 1979, Ser. No. 97,468

Int. Cl.³ C07C *121/417, 120/00;* **A01N** *37/18, 37/34*

U.S. Cl. 260—465.4 **15 Claims**

1. A method of making cyanoacetamide comprising:

reacting with at least about an equimolar proportion of ammonia at a temperature in the range between about 10° C. and about 80° C. an α-cyanoacetate of the formula:



(I)

wherein R is selected from the group consisting of an alkyl unit containing from 1 to about 20 carbon atoms and an aryl unit containing from 6 to about 12 carbon atoms, said reaction being conducted with said α-cyanoacetate dissolved in a glycol solvent consisting essentially of a straight-chain polyalkylene glycol or a saturated hydrocarbyl ether thereof that is normally liquid at room temperature and non-reactive with the α-cyanoacetate and ammonia.

4,328,172

HYDROCYANATION OF OLEFINS

Morris Rapoport, Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 24, 1981, Ser. No. 237,613

Int. Cl.³ C07C *120/02, 121/26*

U.S. Cl. 260—465.8 R **6 Claims**

1. In a continuous process for the production of dinitriles by the addition of hydrogen cyanide to non-conjugated, unsaturated nitriles in the presence of a zero-valent nickel catalyst promoted with at least one arylborane, a method for reducing the level of promoter required to sustain a rapid reaction rate which comprises conducting the process in at least two immediately successive stages with the effluent from one stage being directed to the next stage, introducing hydrogen cyanide into said stages in an amount such that at least 10% by weight of the total hydrogen cyanide fed is introduced into each stage.

4,328,173

RESOLUTION OF D,L-CIS AND D,L-TRANS 2,2-DIMETHYL-3-(2,2-DIHALOVINYL)-CYCLOPROPANE-1-CARBOXYLIC ACIDS AND SALTS THEREOF

Jean Jolly, Fontenay-sous-Bois; Giuseppe Gigliotti, Paris; Charles Pavan, Nogent-sur-Marne, and Jacques Bulidon, Paris, all of France, assignors to Roussel Uclaf, Paris, France

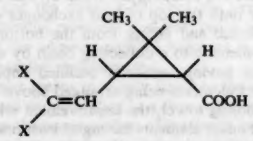
Filed Mar. 17, 1980, Ser. No. 130,994

Claims priority, application France, Apr. 3, 1979, 79 08338

Int. Cl.³ C07C *61/16;* **C07B** *19/00*

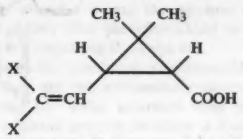
U.S. Cl. 260—501.16 **24 Claims**

1. A process for the resolution of D,L-cis and D,L-trans 2,2-dimethyl-3-(2,2-dihalovinyl)-cyclopropane-1-carboxylic acids of the formula



wherein X is selected from the group consisting of fluorine, chlorine and bromine comprising salifying the said acid with an optically active base selected from the group consisting of D-ephedrine, L-ephedrine, D-N-methyl-ephedrine, L-N-methylephedrine, D-pseudo-ephedrine and L-pseudo-ephedrine in a solvent selected from the group consisting of ethanol, isopropanol, toluene, ethyl acetate, dichloroethane, methyl ethyl ketone and mixtures of isopropyl ether and methanol to form the corresponding salt, recovering the said crystallized salt and subjecting the latter to acid hydrolysis to obtain the corresponding resolved acid.

24. A compound selected from the group consisting of the salts of D-cis, L-cis, D-trans and L-trans 2,2-dimethyl-3-(2,2-dihalovinyl)-cyclopropane-1-carboxylic acids of the formula



wherein X is selected from the group consisting of fluorine, bromine and chlorine with an optically active base selected from the group consisting of D-ephedrine, L-ephedrine, D-N-methyl-ephedrine, L-N-methylephedrine, D-pseudo-ephedrine and L-pseudo-ephedrine.

4,328,174

AROMATIC POLYESTER PHOSPHONATES

Manfred Schmidt, New Martinsville, W. Va.; Dieter Freitag; Ludwig Bottenbruch, both of Krefeld, Fed. Rep. of Germany; Klaus Reinking, Wermelskirchen, Fed. Rep. of Germany; Harry Röhr, Frechen, Fed. Rep. of Germany, and Harald Medem, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 160,957

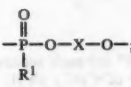
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925206

Int. Cl.³ C07F *9/40*

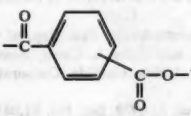
U.S. Cl. 260—930 **5 Claims**

1. A polyester phosphonate of a number average molecular weight of at least 11,000, said phosphonate being a co-condensate containing

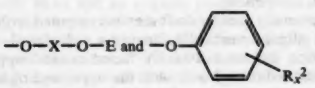
(A) from 5 to 95 mol % of recurring structural units of the formula



(B) from 95 to 5 mol % of recurring structural units of the formula

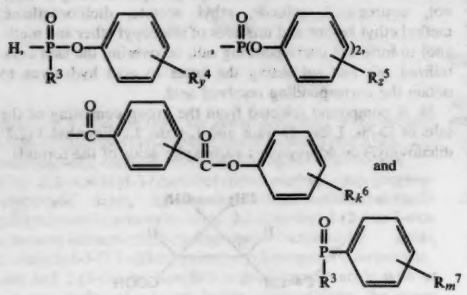


(C) end groups linked to phosphorous selected from the group consisting of:

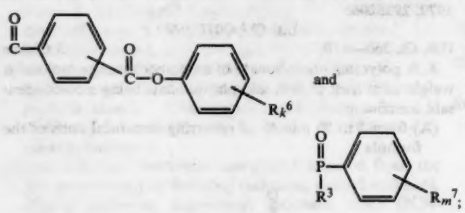


and

(D) end groups linked to oxygen selected from the group consisting of



wherein X and Y are each at least one member selected from the group consisting of phenylene, biphenylene, C_1–C_4 alkylenebisphenylene, C_5–C_{12} cycloalkylenebisphenylene, thiobisphenylene, oxybisphenylene, sulphonylbisphenylene, carbonylbisphenylene, naphthylene, each of said phenylene-containing moieties substituted by 1 to 4 moieties selected from the group consisting of C_1–C_4 alkyl, fluorine, chlorine and bromine and naphthylene substituted by from 1 to 6 moieties selected from the group consisting of C_1–C_4 alkyl, fluorine, chlorine and bromine; R^1 and R^3 are each separately selected from the group consisting of C_1–C_{12} alkyl, C_2–C_{12} alkenyl, C_6–C_{30} cycloalkyl, C_6–C_{30} cycloalkenyl, C_6–C_{30} aryl, C_6–C_{30} aralkyl, C_6–C_{30} aralkenyl and said aryl-containing moiety substituted by from 1 to 5 moieties selected from the group consisting of C_1–C_4 alkyl, fluorine, chlorine and bromine; E is selected from the group consisting of —H,



R^2, R^4, R^5 and R^6 are each separately selected from the group consisting of C_1–C_4 alkyl, fluorine, chlorine and bromine and k, m, x, y and z are each separately 0 to 5.

4,328,175

APPARATUS FOR CONTACTING A LIQUID WITH A GAS

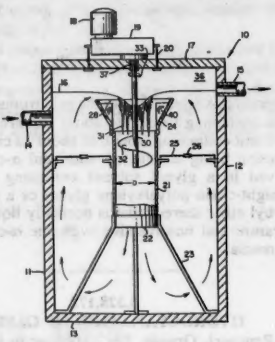
Winfried Roeckel, Taunusstrasse, Fed. Rep. of Germany; Carl Scaccia, Wellsville, and John A. Conti, Neuberg-Ravolz of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 2, 1979, Ser. No. 81,041
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—91 **3 Claims**

1. Apparatus for contacting a liquid, in a tank containing a body of same, with a gas from a gas space overlying said body of liquid, comprising:

(a) a generally tubular draft member oriented with its central axis aligned vertically, having a cylindrical main body portion and an outwardly flared conical upper section positioned in said tank with the upper end of said conical inlet section forming a liquid inlet positioned proximate to but beneath normal liquid level in said tank and with the lower end of said draft member vertically spaced from the bottom of said tank to form a liquid outlet, wherein enclosing walls of said conical inlet section form an angle with the draft member central axis of from 5° to 35° and said conical inlet section has a vertical height of from 0.25 to 1.25 times the diameter of said draft member;

(b) a rotatable axial pumping impeller having a diameter which is smaller than but at least 90% of the diameter of said draft member, positioned in said draft member proximate to the juncture of said conical inlet section and the cylindrical main body portion of said draft member, for axial downflow pumping of liquid through said draft member and inducement of circulation of liquid discharged from said draft member liquid outlet through said body of liquid in said tank to said draft member liquid inlet;



(c) means for rotating said impeller at a speed above about 200 rpm so as to create a plurality of gas vortices within said conical inlet section of said draft member for vortex entrainment of gas in the downwardly flowing liquid pumped through said draft member; and

(d) baffle means positioned in said conical inlet section of said draft member above said impeller to prevent bulk rotation of said body of liquid in said tank during rotation of said impeller while permitting the formation of a liquid vortex extending downwardly towards said impeller for said vortex entrainment of gas, to effect said gas-liquid contacting.

4,328,176

APPARATUS FOR DAMPING THE NOISE IN COOLING TOWERS

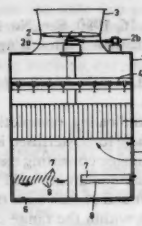
Werner Alt, Bochum; Siegfried Kretzschmar, Bochum-Oberdahlhausen, and Hans-Joachim Wöhler, Bochum, all of Fed. Rep. of Germany, assignors to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,441
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948602
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—111 **21 Claims**

1. In a device for damping the noise of water charged in a cooling tower onto the top of heat exchanger elements by a distributing device and falling from the bottom of the heat exchanger elements into a collecting basin by means of rigid insert elements having vertically inclined impingement surfaces, the insert elements being arranged above the collecting basin in the cooling tower, the improvement wherein

each of said insert elements having at least one said inclined impingement surface, each said inclined impingement surface has a lower edge arranged above a predetermined operational maximum water level in said collecting basin,

a flexible guide tail extends downwardly from one said lower edge of each of said insert elements to below a



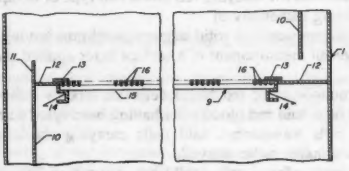
predetermined minimum water level in said collecting basin into the water.

4,328,177

VAPOR-LIQUID CONTACTING APPARATUS

John E. Trager, Arlington Heights, Ill., assignor to Procon International Inc., Des Plaines, Ill.

Filed Aug. 29, 1980, Ser. No. 182,355
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—114 JP **12 Claims**



1. A vapor-liquid contacting apparatus which comprises:

(a) a vapor containment vessel having a sidewall with a substantially vertical inner surface;

(b) a substantially horizontal liquid support plate having an upper surface and an outer edge which is adjacent to at least a portion of the inner surface of the sidewall of the vapor containment vessel, the liquid support plate having a substantially horizontal vapor-liquid contacting area comprising a plurality of horizontal parallel members having a flat upper surface possessing a width of between about 0.15 cm and 0.55 cm and being uniformly spaced apart by a distance between 0.022 cm. and about 0.051 cm. to substantially eliminate weeping through said liquid-support plate, with the vapor-liquid contacting area of the support plate having an open area between about 5.0 and about 16.5 percent and also having a flat upper surface, and with the parallel members being shaped such that the smallest distance between any two adjacent parallel members is located at the upper surface of the adjacent parallel members and the distance between the vertical sides of adjacent parallel members is at least twice as large at the bottom of the adjacent parallel members as at the top of adjacent parallel members; and

(c) downcomer means to supply liquid to the upper surface of the liquid support plate at a first point and to remove liquid from the upper surface of the liquid support plate at a second point, with the liquid flow path between the first and the second points being perpendicular to the parallel members of the vapor-liquid contacting area.

4,328,178

PROCESS OF PRODUCING A BUILDING PRODUCT OF GYPSUM, PARTICULARLY A GYPSUM SLAB

Gert Kossatz, No. 33, Bohnenkamp, 3300 Braunschweig, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,070
Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919311
Int. Cl.³ B28B *1/08;* B29J *5/00;* B29C *23/00*
U.S. Cl. 264—69 **22 Claims**

1. A semi-dry process of producing a building product, particularly a gypsum slab having a density below 800 kg/m³, with gypsum and mixing water, wherein the quantity of mixing water required for rehydration and molding is at least substantially completely introduced into the gypsum by means of water saturated porous filler particles added in a distributed form, said process comprising the steps of:

(a) wetting particles consisting predominately of porous filler until they are just substantially saturated and intimately mixing the water saturated filler particles with pulverous calcined gypsum to form a fluid particulate mixture, the amount of water contained in said water saturated particles being limited to assure formation of said fluid particulate mixture and hydration of said calcined gypsum but being insufficient to form a pulpy-liquid phase mixture;

(b) forming said fluid particulate mixture, at least almost completely without the application of pressure, into the shape of a gypsum building product;

(c) permitting mixing water of the water saturated particles to be absorbed by the pulverous gypsum, and

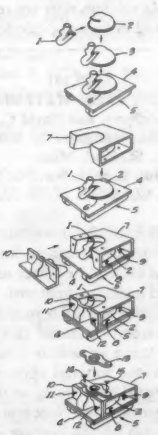
(d) permitting the resulting mixture to set and harden.

4,328,179

METHOD FOR MAKING A CAST TOILET BASE OF PLASTICS MATERIAL

Louis A. Garasi, Canyon Country, and Ronald F. Hayes, Northridge, both of Calif., assignors to Gruber Systems, Inc., Valencia, Calif.

Filed Apr. 7, 1980, Ser. No. 138,209
Int. Cl.³ B29D *3/00;* B29C *5/00*
U.S. Cl. 264—271.1 **5 Claims**



1. A method for making a toilet base comprising placing an organic plastic bowl and an organic plastic trap in a casting mold having the shape of a toilet base, filling the mold about said bowl and said trap with sufficient thermosetting organic plastic to form the exterior of said toilet base, curing said thermosetting organic plastic to form a rigid toilet base structure, and removing said structure from said mold with said

thermosetting organic plastic forming the exterior of said toilet base.

4,328,180

COOLING WATER CORROSION INHIBITOR

Gerald D. Hansen, Holecong, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 317,965, Nov. 4, 1981. This application Oct. 31, 1980, Ser. No. 202,894

Int. Cl.[3] C23F *11/16*

U.S. Cl. 422—15 3 Claims

1. A method of inhibiting metallic corrosion and inhibiting deposition of calciferous scale in cooling water systems, which method consists of injecting chemicals into cooling water containing bicarbonate ion and containing from about 10 to 600 ppm of cations of the group consisting of calcium and magnesium, said injection providing in said cooling water injection chemicals consisting essentially of the following components:

	concentration range - ppm
polyacrylic acid, MW. 1,000	0.3–3.0
tartaric acid	0.1–1.0
sodium sulfonate dispersant	0.1–2.0
mixture of plurality of disphosphonates, triphosphonates, tetraphosphonates and polyphosphonates	0.1–1.0
phosphate ester dispersant	0.5–3
inorganic phosphate	3–40
aromatic triazole	0.1–10

said inhibited cooling water havin a pH within the range from 6.5 to 8.2, said corrosion inhibition being attributable to the propensity for said treated cooling waters to form protective layers on metals contacted by said cooling waters, said protective layer comprising a dynamic equilibria mixture of several of said components, the inorganic phosphate being the component present in the greatest concentration, and said scale inhibition being attributable to control of pH, control of dispersant effectiveness, and control of relationships amongst bicarbonate, phosphate, and calcium ions, whereby any propensities for formation of insoluble calcium salts are regulated to be in the dispersed phase instead of forming calciferous scale.

4,328,181

INDICATOR MATERIAL

Leon W. Anders, Woodbury, and David C. Weigel, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Jul. 6, 1979, Ser. No. 55,146

Int. Cl.[3] G01N *21/78, 31/22*

U.S. Cl. 422—56 16 Claims

1. Indicator material for the quantitative detection of low concentrations of a selected hazardous material in ambient air comprising a pigment material, a binder and a sensitizer, reactive with said selected hazardous material, coated upon a transparent substrate as porous coating permitting gaseous diffusion of said selected hazardous material thereinto, said pigment material and binder being present in a ratio of about 5:1 to about 40:1, said indicator material upon exposure to said selected hazardous material undergoing an irreversible chemical reaction which progresses, as a function of diffusion, layerwise through the depth of the coating until it reaches the transparent substrate resulting in a visually resolvable color change viewed through said transparent substrate, said reaction rate being proportional to the sensitizer concentration and the coating weight, said reaction in said coating being initially gradual and becoming more rapid as it approaches its final value thus indicating that exposure to said selected hazardous material has reached a selected time-weighted-average value.

4,328,182

STERILIZATION INDICATORS CONTAINING AMINO ACID(S) AND PH INDICATOR

Graham J. Blake, Langham, England, assignor to Albert Browne Limited, England

Filed Oct. 16, 1980, Ser. No. 197,544

Claims priority, application United Kingdom, Oct. 24, 1979, 36833/79

Int. Cl.[3] G01N *31/22, 33/52*

U.S. Cl. 422—56 9 Claims

1. An indicator for indicating completion of a sterilisation process in which an article to be sterilised is exposed to formaldehyde vapour, the indicator consisting essentially of a carrier, and a mixture of at least one amino acid and a pH indicator deposited on said carrier and chosen such that the change point of the pH indicator lies within the range of the change of pH value of said amino acid which occurs on exposure of the amino acid to formaldehyde vapour.

4,328,183

BLOOD CELL TYPING AND COMPATIBILITY TEST PROCEDURE

Richard E. Rosenfield, Bronx, and Shaul Kochwa, Queens, both of N.Y., assignors to Mt. Sinai School of Medicine of the City University of New York, N.Y.

Division of Ser. No. 915,507, Jun. 14, 1978, Pat. No. 4,275,053, which is a continuation-in-part of Ser. No. 856,799, Dec. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 604,808, Aug. 14, 1975, abandoned. This application Jul. 18, 1980, Ser. No. 170,076

Int. Cl.[3] G01N *1/00, 33/48, 33/80, 35/00*

U.S. Cl. 422—57 6 Claims

1. A substrate for assaying red blood cell type or compatibility consisting essentially of

(a) a light transmitting solid support membrane having a face to permit measurement of a surface layer applied thereon; and

(b) a monolayer of red blood cells irreversibly adhered to said face, said red blood cells having been lysed to render the cells transparent, said cells carrying the antigenic determinants to be assayed.

5. A substrate for assaying cell type or compatibility consisting essentially of

(a) a light transmitting solid support member of polystyrene with a face adapted to permit measurement of a surface layer thereon;

(b) a layer of fibrinogen bound to said face of the polystyrene substrate; and

(c) a layer of polylysine bound to said fibrinogen, said polylysine layer being capable of irreversibly binding a monolayer of cells to be assayed thereto.

4,328,184

TEST SLIDE STRIP

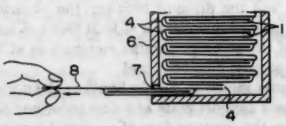
Asaji Kondo, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 20, 1980, Ser. No. 208,680

Claims priority, application Japan, Nov. 30, 1979, 54-165642

Int. Cl.[3] G01N *31/00, 33/52;* B65D *69/00*

U.S. Cl. 422—58 5 Claims



1. A test slide strip comprising a plurality of quantitative analysis slides for analysis of a component of fluid samples, a

continuous base sheet and a continuous cover sheet, said test slides being sandwiched and sealed between the base sheet and the cover sheet at equal intervals with blank portions between adjacent test slides so that the test slide strip has alternately slide holding portions and slide free portions along its length, said slide free portions being longer than the test slide, whereby the slide strip can be folded in an accordion shape so that the slide holding portions and the slide free portions are alternately superposed.

4,328,185

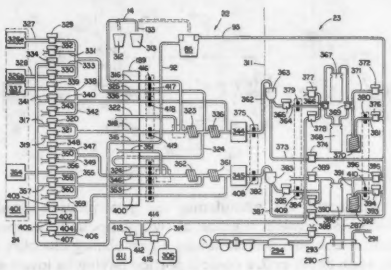
AUTOMATED CHEMICAL TESTING APPARATUS

Robert Reasons, Santa Ana, and Bill E. Albright, Laguna Niguel, both of Calif., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Jun. 26, 1980, Ser. No. 163,093

Int. Cl.³ G01N *35/08*

U.S. Cl. 422—82 **17 Claims**



1. An automated chemical testing apparatus which comprises:

continuous flow means for providing a continuous flow stream of alternating sample and intersample fluid segments, each intersample fluid segment including a liquid wash segment;

collecting means for separately collecting each of the sample segments and for collecting the intersample segments including the wash segments separately of the sample segments;

analysis means for analyzing the sample segments;

waste collection means for collecting waste fluids said analysis means and said waste collection means each being connected with said collecting means; and

discrete flow means for alternately flowing a collected sample segment to said analysis means and an intersample segment to said waste collection means.

4,328,186

RECIRCULATING POLYMERIZATION METHOD AND APPARATUS WITH EVAPORATIVE COOLING

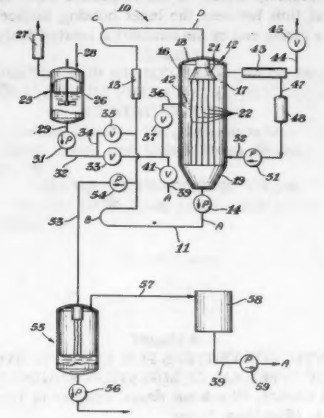
Henry J. Karam, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 89,009, Oct. 29, 1979, abandoned, which is a division of Ser. No. 922,013, Jul. 5, 1978, abandoned. This application Apr. 9, 1981, Ser. No. 252,711

Int. Cl.³ C08F *2/00*; B01J *19/00*

U.S. Cl. 422—132 **1 Claim**

1. An improved polymerization reactor, the reactor comprising in cooperative combination a reaction vessel generally in the configuration of a closed loop, a recirculating means for recirculating a polymerizing viscous liquid material about the closed loop, a supply or feed means in communication with the interior of the reactor adapted to supply reaction materials to the reactor, a discharge means in operative communication with the reactor adapted to remove materials therefrom, the improvement which comprises a housing defining an evaporation chamber integral within the closed loop, the evaporation chamber adapted to receive and discharge material flowing within the loop, the chamber having a vapor space through which the material circulating within the loop passes, the evaporation chamber being elongate and generally vertically disposed, the chamber having an upper end and a lower end, the evaporation chamber having an inlet adjacent the upper end and discharge means adjacent the lower end for discharging said viscous polymerizing liquid material into said reaction-loop, the inlet defining a plurality of openings to thereby divide a stream entering the evaporation chamber into a plurality of falling strands, a condenser connected to the housing, the condenser being in operative communication with the evaporation chamber to condense vapor therefrom, and to thereby provide evaporative cooling for said material.



4,328,187

ELASTIC SUSPENSION FOR A MONOLITHIC CATALYZER BODY IN AN EXHAUST GAS CLEANING DEVICE

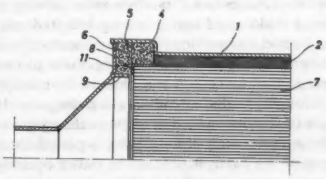
Reimar Musall, Burgdorf, and Wilhelm Wolsing, Hanover, both of Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

Filed Jul. 5, 1973, Ser. No. 376,338

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1972, 2233886

Int. Cl.³ F01N *3/15*; B01J *8/02*

U.S. Cl. 422—179 **11 Claims**



1. In a catalyzer for detoxifying exhaust gases from internal combustion engines, wherein a monolithic catalyst body having an outer surface and facing ends is supported in a housing having an inner surface, by support means arranged between said inner surface of said housing and said outer surface of said monolithic catalyst body, the improvement wherein said support means comprise elastically yielding means, and holding means for locating said elastically yielding means at least partially between each facing end of said monolithic catalyst body and the inner surface of said housing, whereby the monolithic

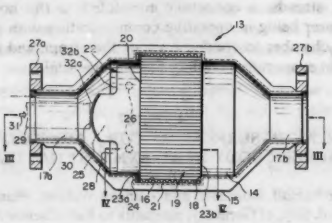
catalyst body is elastically restrained in said housing against movement in all three dimensions of space, wherein said elastically yielding means are elastically deformable damping rings having an inner diameter, said holding means comprising inner supporting means located in said housing for holding said rings at the respective inner diameter thereof whereby the damping rings are securely seated on the respective inner supporting means and thus between the inner housing surface and the respective facing end of the monolithic catalyst body.

4,328,188

CATALYTIC CONVERTERS FOR EXHAUST SYSTEMS OF INTERNAL COMBUSTION ENGINES

Masayuki Kawata, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Mar. 4, 1981, Ser. No. 240,585
Claims priority, application Japan, Mar. 5, 1980, 55-29303[U]
Int. Cl.³ F01N *3/10*
U.S. Cl. 422—180 **10 Claims**



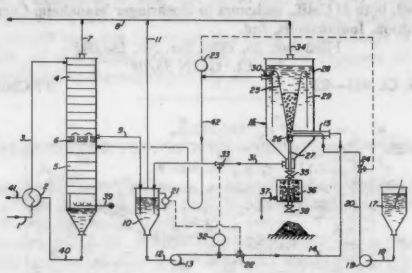
1. A catalytic converter including a casing comprised of a pair of shells which are welded together along peripheries thereof, said shells respectively having inside recessed portions which provide when they are mated one against the other a space of oval cross-sectional configuration having a height smaller than a width, said casing having longitudinally opposite inlet and outlet end portions formed respectively with inlet and outlet openings which are located opposite to each other with respect to said space; a monolithic catalyst unit having a plurality of longitudinally extending gas passages and located in said space of the casing so that engine exhaust gas admitted through the inlet opening of the casing is passed through the gas passages of the catalyst unit to the outlet opening of the casing; support means provided in the casing at an end of the space adjacent to the outlet opening for engagement with one longitudinal end of the catalyst unit; a retaining member made of a single piece of metal plate and provided in the casing at an end of the space adjacent to the inlet opening, said retaining member including a retaining portion for engagement with the other longitudinal end of the catalyst unit, a baffle portion for distributing the engine exhaust gas throughout the cross-section of the space, and a connecting portion integrally connecting the retaining portion with the baffle portion; and means for securing the connecting portion of said retaining member to said casing.

4,328,189

APPARATUS FOR THE GRANULATION OF PRECIPITATION PRODUCTS FORMED FROM AMMONIUM COMPOUNDS

Egon Haese, Bochum; Rolf Willms, Witten, and Karl D. Schultheiss, Bochum, all of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Division of Ser. No. 115,648, Jan. 28, 1980, abandoned. This application Apr. 13, 1981, Ser. No. 253,738
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903289
Int. Cl.³ B01F *3/08*
U.S. Cl. 422—224 **5 Claims**



1. Apparatus for granulating the precipitation products formed by a chemical reaction of two compounds comprising a reaction chamber which houses a granulating chamber having an open upper end, a conical portion having its lower small diameter edge secured to the periphery of said upper open end, an apron spaced from the inner periphery of said reaction chamber, said apron merging at its upper end with the center, upper edge of said conical portion; nozzle means for injecting into the granulating chamber separate aqueous streams containing the compounds to be reacted, an outlet in the upper portion of said reaction chamber for withdrawing liquid from the space between said apron and said conical portion; and conduit means for withdrawing granules from said granulating chamber through the bottom thereof.

4,328,190

SOLVENT EXTRACTION OF TUNGSTEN FROM AQUEOUS TUNGSTATE SOLUTIONS

Leo W. Beckstead, Arvada, and Dale K. Huggins, Golden, both of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Jan. 19, 1981, Ser. No. 225,906
Int. Cl.³ C01G *41/00*
U.S. Cl. 423—54 **12 Claims**

1. A process for extracting tungsten values from an aqueous phase into an organic phase, wherein a tungsten-depleted organic extractant is mixed with a tungsten-enriched aqueous phase to form a tungsten-organic complex in said extractant, comprising

(a) providing an aqueous phase containing tungsten values dissolved therein, and having an initial pH of about 2.2 to about 4.0,

(b) providing a water-immiscible organic phase selected from the group consisting of ditridecylamine dissolved in an aliphatic solvent, and water-insoluble secondary and tertiary amines dissolved in aromatic hydrocarbons, said organic phase also containing a modifier in an amount effective to increase the solubility of the tungsten-organic complex in said organic phase, and to increase the rate of separation of the organic-aqueous mixture,

(c) contacting said aqueous phase with said organic phase in a plurality of extraction stages, including a final extraction stage, operating in countercurrent fashion to extract tungsten values from said organic phase into said aqueous phase, and

(d) recovering from the final extraction stage the organic phase enriched in tungsten values and an aqueous raffinate having a pH of about 3.0 to about 4.5, wherein acid is added to the final extraction stage to maintain the pH of the aqueous raffinate at about 3.0 to about 4.5.

4,328,191

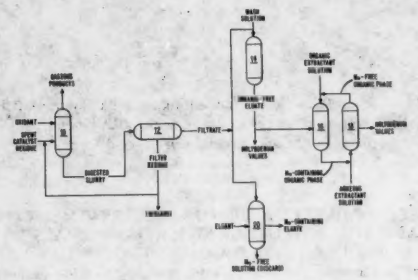
PROCESS FOR THE RECOVERY OF MOLYBDENUM FROM SPENT CATALYSTS

Sophia R. Su, Wellesley, and Samuel Natansohn, Sharon, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 149,058, May 12, 1980, abandoned. This application Feb. 13, 1981, Ser. No. 233,401

Int. Cl.³ C01G *39/00*

U.S. Cl. 423—54 **24 Claims**



1. The method of recovering water insoluble organically-bound molybdenum from spent viscous fluid organic catalyst residues derived from the epoxidation of olefins, wherein a portion of said organically-bound molybdenum is in the 5+ oxidation state, and wherein said viscous fluid residues contain less than 5 weight percent molybdenum, said method comprising the steps of:

(a) contacting said viscous fluid residues with an aqueous solution containing up to 20 weight percent of a material selected from the group consisting of hydrogen peroxide, sodium peroxide, sodium hypochlorite, chlorine, and ozone for a period sufficient to oxidize a portion of said molybdenum to a higher oxidation state water soluble form and to transfer a portion of said molybdenum to a higher oxidation state water soluble form and to transfer a portion of said water soluble molybdenum to said aqueous solution;

(b) separating said aqueous solution containing said water soluble molybdenum; and

(c) thereafter isolating the molybdenum from said aqueous solution.

4,328,192

AMMONIACAL NICKEL LEACH OF LATERITES

William K. Tolley, Arlington Heights, and Francisco J. Corral, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 14, 1980, Ser. No. 140,048

Int. Cl.³ C01G *53/00*

U.S. Cl. 423—150 **6 Claims**

1. A process for the increase in the recovery of nickel metal values from a lateritic ore which comprises treating said ore first with at least one additive selected from the group consisting of hydrogen halide, elemental sulfur and a sulfur containing compound in a reducing atmosphere at a temperature beginning at about 360° C. and extending to below 500° C. for a period of time of not less than 10 minutes while said temperature is held to below 500° C. and then increasing said temperature after said passage of not less than 10 minutes up to about 900° C., cooling said treated ore and additive, extracting said increased amount of nickel metal values from said treated and cooled ore with a basic ammoniacal leaching solution, and recovering said resultant increased amount of nickel metal values.

4,328,193

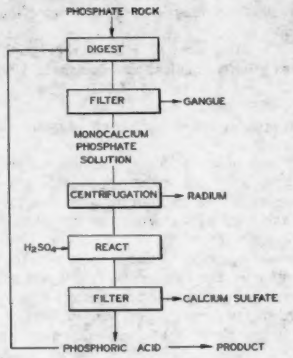
PROCESS FOR REMOVING RADIUM FROM MONOCALCIUM PHOSPHATE SOLUTIONS BY CENTRIFUGATION

Harold V. Larson, Houston, Tex., assignor to Olin Corporation, New Haven, Conn. and United States Gypsum Company, Chicago, Ill.

Filed Feb. 27, 1980, Ser. No. 125,300

Int. Cl.³ C01F *11/46, 13/00*; C01B *25/16*

U.S. Cl. 423—166 **3 Claims**



1. A process for simultaneously producing a phosphoric acid solution and a calcium sulfate product comprising:

(a) digesting radium-containing phosphate rock with a solution comprising either phosphoric acid, monocalcium phosphate, or mixtures thereof, to form a resulting monocalcium phosphate solution containing undigested gangue material;

(b) separating said gangue from said solution, thereby leaving a substantially homogeneous monocalcium phosphate containing radium impurities;

(c) directly subjecting said substantially homogeneous monocalcium phosphate solution without additional processing to sufficient centrifugation in order to separate at least a portion of said radium from said solution;

(d) reacting said substantially homogeneous monocalcium phosphate solution with sufficient sulfuric acid to form a first monocalcium phosphate/phosphoric acid solution containing a first calcium sulfate product, the amount of said sulfuric acid being less than the stoichiometric amount necessary to react with the Ca^{++} present in the monocalcium phosphate solution;

(e) separating the first monocalcium phosphate/phosphoric acid solution from said first calcium sulfate product;

(f) then reacting the separated first monocalcium phosphate/phosphoric acid solution with sufficient sulfuric acid to form a second monocalcium phosphate/phosphoric acid solution containing a second calcium sulfate product; and

(g) separating the second monocalcium phosphate/phosphoric acid solution from said second calcium sulfate product, said separated second calcium sulfate product containing less than about 5 pCi/gm of radium.

4,328,194
NITROGEN OXIDE REMOVAL PROCESS

Norm C. Samish, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 15, 1981, Ser. No. 273,534
Int. Cl.³ B01D *53/00*
U.S. Cl. 423—235 **9 Claims**

1. A process for the non-catalytic, selective reduction of NO in a combustion effluent gas stream, said process comprising contacting said gas stream containing NO with sulfur in an amount sufficient to provide at least one mole of sulfur (as S_8) per 16 moles of NO, at a temperature of about 445° C. to about 2000° C., therein producing a product stream containing N_2 and SO_2.

4,328,195
PROCESS FOR DESULFURIZING COMBUSTION EXHAUST GASES

Toshikatsu Mori; Teruo Kumagai; Shinpei Matsuda, all of Hitachi; Tsukasa Nishimura, and Yasuyuki Nishimura, both of Kure, all of Japan, assignors to Babcock-Hitachi, Ltd., Tokyo, Japan

Filed Mar. 14, 1980, Ser. No. 130,388
Claims priority, application Japan, Mar. 19, 1979, 54-31929
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **4 Claims**

1. A process for desulfurizing combustion exhaust gases which comprises:

a first step of contacting combustion exhaust gases containing sulfur oxides, hydrogen fluoride and dust containing aluminum with calcium carbonate or calcium hydroxide in the form of slurry to convert said sulfur oxides into calcium sulfite;

a second step of contacting oxygen with the resulting slurry containing calcium sulfite to convert this slurry into a slurry containing calcium sulfate;

a third step of separating calcium sulfate and a mother liquor from said slurry containing calcium sulfate;

and

a fourth step of preparing a slurry of calcium carbonate or of calcium hydroxide to be employed in said first step, from said mother liquor, the pHs of the slurry and the mother liquor present in said first step and said fourth step being adjusted to 5 or higher by adding alkali selected from the group consisting of sodium carbonate, calcium hydroxide, sodium hydroxide, potassium hydroxide and mixtures thereof, thereby precipitating fluoride and dust containing aluminum removed from the combustion exhaust gases.

4,328,196
PRODUCTION OF ALKALI METAL PRODUCTS FROM ALKALI METAL FLUOSILICATE

John B. Sardisco, Shreveport, La., and Erhart K. Drechsel, Montgomery, Tex., assignors to Pennzoil Company, Houston, Tex.

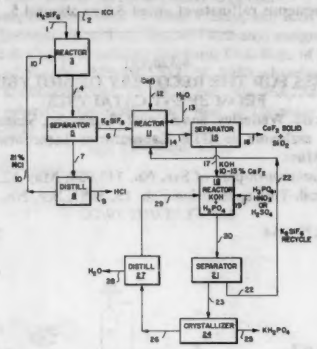
Filed Sep. 25, 1980, Ser. No. 190,850
Int. Cl.³ C01B *25/30*; C01D *5/02, 9/04*
U.S. Cl. 423—309 **12 Claims**

1. A process for the production of an alkali metal containing product selected from the group consisting of alkali metal dihydrogen phosphate, alkali metal sulfate, alkali metal nitrate, and mixtures thereof, together with alkaline earth metal fluoride, from alkali metal fluosilicate, which process comprises the steps of:

(a) reacting an alkali metal fluosilicate with a sufficient amount of an alkaline earth metal compound in an aqueous medium to convert the fluorine contained in the alkali metal fluosilicate to an alkaline earth metal fluoride and form an alkali metal hydroxide;

(b) separating and recovering a solid which contains alkaline earth metal fluoride from the reaction product of step (a);

(c) reacting the remaining reaction product, which contains the alkali metal hydroxide, with a mineral acid selected from the group consisting of phosphoric acid, sulfuric acid, nitric acid and mixtures thereof to form an alkali metal salt of the mineral acid;



(d) recovering a solution containing the alkali metal salt; and

(e) recovering from the solution, as the alkali metal containing product, the alkali metal salt in solid form.

4,328,197
METAL-MICELLE ASBESTOS AND TREATMENT OF ASBESTOS AND OTHER SILICATE MINERALS TO REDUCE THEIR HARMFUL PROPERTIES

Earl S. Flowers, Petaluma, Calif., assignor to Flow General, Inc., McLean, Va.

Filed Jan. 8, 1980, Ser. No. 110,455
Int. Cl.³ C01B *33/20, 33/22*
U.S. Cl. 423—327 **31 Claims**

1. A method for rendering silicate minerals less harmful to living cells comprising the step of:

contacting a silicate mineral with

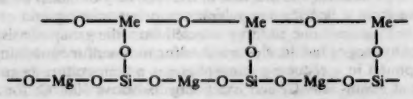
(a) a metal-weak base-strong acid ion system, wherein said system comprises (i) an aqueous solution containing at least three ions, said three ions including a cation from a weak base, an anion from a strong acid and a metal ion, or (ii) an aqueous solution containing at least two ions, said two ions including a cation from a weak base and a metal-containing anion from a strong acid, or

(b) a metal-strong base-weak acid ion system, wherein said system comprises an aqueous solution containing at least three ions, said three ions including a cation from a strong base, an anion from a weak acid and a metal ion,

wherein said metal is selected from the group consisting of manganese, chromium, cobalt, iron, copper, aluminum and mixtures thereof, and

whereby said metal-weak base-strong acid ion system or said metal-strong base-weak acid ion system forms a metal-micelle polymer silicate mineral by inducing formation of a metal-micelle polymer coating on said silicate mineral, said polymer coating being ionically bonded to said silicate mineral.

23. A metal-micelle polymer chrysotile asbestos having repeating units of the formula



wherein Me is a metal selected from the group consisting of manganese, chromium, cobalt, iron, copper, aluminum, and mixtures thereof.

4,328,198

CYCLIC PROCESS FOR THE PREPARATION AND PROCESSING OF A HYDROXYLAMMONIUM SALT SOLUTION

Cornelis G. M. van de Moesdijk, Elsloo, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Oct. 2, 1980, Ser. No. 193,107

Claims priority, application Netherlands, Oct. 5, 1979, 7907395

Int. Cl.³ C01C *3/08*

U.S. Cl. 423—371 2 Claims

1. In cyclic processes for the preparation and processing of a hydroxylammonium salt solution in which a circulating aqueous acid reaction medium is maintained in circulation between a hydroxylammonium salt synthesis zone and an oxime synthesis zone wherein the said reaction medium is continuously supplied with nitrogen monoxide as a nitrogen source for the formation of the said hydroxylammonium salt by catalytic reduction to hydroxylamine by means of hydrogen, the improvement which in combination with said process consists essentially in subjecting said circulating aqueous reaction medium to a stripping process, to remove organic catalyst poison contaminants therefrom, before re-circulating said medium to said hydroxylammonium salt synthesis zone, by inducing an indirect heat-exchange between said aqueous reaction medium and water-vapor-containing nitrogen monoxide gas stream, to cause discharge of water vapor from said aqueous medium with entrainment of said organic contaminants leaving an aqueous acid reaction medium for circulation substantially free from said poisons while simultaneously causing condensation of at least a portion of the water vapor from said gas stream to condense on the heat-exchange surface, thereby forming a substantially de-watered nitrogen monoxide gas for use as said nitrogen source.

4,328,199

METHOD FOR PRODUCING CARBON BLACK

Paul J. Cheng, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 12, 1980, Ser. No. 186,794

Int. Cl.³ C01B *31/02;* C09C *1/48*

U.S. Cl. 423—450 11 Claims

1. In a method wherein make hydrocarbon and atomizing fluid are supplied to an atomizing bifluid nozzle and the make hydrocarbon is atomized by discharging the make hydrocarbon and atomizing fluid through the atomizing bifluid nozzle, and wherein the atomizing bifluid nozzle becomes coked thereby diminishing the flow rate of at least one of the make hydrocarbon and the atomizing fluid, the improvement comprising:

interrupting flow of the atomizing fluid to effect cleaning of the atomizing bifluid nozzle.

4,328,200

PROCESS FOR PRODUCING CALCIUM HYPOCHLORITE

Cletus N. Welch, Clinton; Clifford E. Loehr, Norton; Roger A. Crawford, Wadsworth, and John E. Carbaugh, Akron, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 1, 1981, Ser. No. 269,241

Int. Cl.³ C01B *11/06*

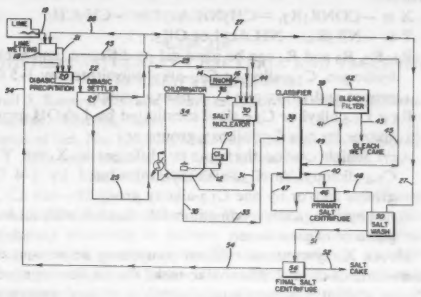
U.S. Cl. 423—474 27 Claims

1. In the process of producing neutral calcium hypochlorite by chlorination of an aqueous slurry of dibasic calcium hypochlorite, the improvement which comprises the steps of:

(a) introducing with agitation into a vessel in the absence of added elemental chlorine (1) aqueous slurry of dibasic calcium hypochlorite, (2) substantially stoichiometric amounts of sodium hydroxide, basis the calcium hydroxide content of the dibasic calcium hypochlorite aqueous slurry introduced into said vessel, and (3) aqueous salt solution in amounts at least sufficient to substantially dilute the sodium hydroxide introduced into said vessel, said aqueous salt solution being substantially saturated with calcium ion and sodium chloride;

(b) forwarding aqueous mixture prepared in step (a) to a chlorination zone in a chlorinator containing a seed bed of crystals of sodium chloride and crystals of neutral calcium hypochlorite in an aqueous chlorinator liquor maintained at temperatures less than about 35° C.;

(c) introducing chlorine into the chlorination zone;



(d) removing from the chlorinator, chlorinator liquor containing a suspension of calcium hypochlorite particles and sodium chloride crystals significantly larger than the calcium hypochlorite particles; and

(e) separating said larger crystals of sodium chloride from said particles of calcium hypochlorite, thereby forming an aqueous slurry rich in particles of calcium hypochlorite and an aqueous slurry rich in crystals of sodium chloride.

4,328,201

REDUCTION OF SULFUR DIOXIDE WITH RECYCLED COAL

Peter Steiner; Carl Gutterman, both of Edison, N.J., and Stuart M. Dalton, Menlo Park, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Nov. 24, 1980, Ser. No. 209,353

Int. Cl.³ C01B *17/04*

U.S. Cl. 423—569 13 Claims

1. A process for the reduction of sulfur dioxide to elemental sulfur comprising introducing steam and a SO_2-containing off-gas into a reactor containing a mixture of fresh and recycled coal, wherein the recycled coal constitutes from 30% to 90% of the total coal mixture, and contacting the steam and SO_2-containing off-gas with the coal at a temperature sufficient to reduce the SO_2 to elemental sulfur.

4,328,202

IONIC 5-C-SUBSTITUTED 2,4,6-TRIIODOISOPHTHALIC ACID DERIVATIVES

Heinz Gries; Heinrich Pfeiffer; Ulrich Speck, and Wolfgang Muetzel, all of Berlin, Fed. Rep. of Germany, assignors to Schering, A.G., Berlin, Fed. Rep. of Germany

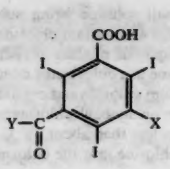
Filed Jan. 9, 1981, Ser. No. 223,634

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, 3001293

Int. Cl.³ A61K *49/04;* C07C *63/08, 63/10*

U.S. Cl. 424—5 22 Claims

1. A compound of the formula



wherein

X is $-CONR_1R_2$, $-CH_2NH.Acyl$ or $-CH_2CH$;

Y is $-NR_3R_4$, $-NH.Acyl$ or OR_5;

R_1, R_2, R_3 and R_4 can be identical or different, and each is hydrogen, C_{1-6}-alkyl or C_{2-8}-alkyl substituted by 1–5 OH groups and/or by one C_{1-3}-alkoxy group;

R_5 is C_{1-6} alkyl or C_{2-8}-alkyl substituted by 1–5 OH groups and/or by one C_{1-3}-alkoxy group;

Acyl which can be the same or different in X and Y, is C_{2-6}-alkanoyl or C_{2-6}-alkanoyl substituted by 1–4 OH groups and/or by one C_{1-3}-alkoxy group

or a physiologically compatible salt thereof with an inorganic or organic base.

19. An X-ray contrast medium comprising an amount of a compound of claim **1** effective to make the medium opaque to X-rays after it has been administered to a host undergoing X-ray diagnosis, and a pharmaceutically acceptable carrier.

21. A method of rendering an inner cavity of a host opaque to X-rays, comprising administering an X-ray contrast medium of claim **19** to the host in such a manner that it passes through the inner cavity and in such an amount that, when the medium reaches the inner cavity, it renders the cavity opaque to X-rays.

4,328,203

MICROBIAL INSECTICIDE

Kemet D. Spence, Potlatch, Id., and Robert E. Andrews, Pullman, Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Continuation of Ser. No. 33,895, Apr. 27, 1979, Pat. No. 4,223,007, which is a continuation-in-part of Ser. No. 835,817, Sep. 22, 1977, abandoned. This application Sep. 15, 1980, Ser. No. 187,455

Int. Cl.[3] **A61K** *39/02, 39/12;* **C12K** *1/08;* **A01N** *15/00*

U.S. Cl. 424—16 **8 Claims**

1. An insecticidal composition comprising a microbial agent in combination with at least one of its biologically active chemical products embedded in a coacervate microbead having an effective diameter within the range of from about 10 to about 200 microns which is comprised of a nucleic acid and a proteinaceous material admixed in a nucleic acid to proteinaceous material ratio in the range of from about 1:5 to about 5:1.

4,328,204

ABSORBABLE POLYMER-DRUG COMPOUNDS AND METHOD FOR MAKING SAME

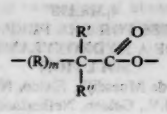
David Wasserman, Springfield; Charles C. Versfelt, Somerville; Dowon Hahn, Flemington, and Michael P. Wachter, Bloomsbury, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Mar. 2, 1977, Ser. No. 773,449

Int. Cl.[3] **A01N** *25/26;* **A61J** *3/00*

U.S. Cl. 424—19 **8 Claims**

1. A method for making an α-polyester polymer-drug compound where an α-polyester polymer is end capped with a steroid drug which comprises polymerizing a monomer selected from the group consisting of lactide, glycolide, and mixtures of lactide and/or glycolide with up to 50 percent by weight of a comonomer having units of the formula:



wherein

R is a lower alkylene or alkylidene of up to 4 carbon atoms;

m is zero or 1;

R′ is H or a lower alkyl of up to 3 carbon atoms;

R″ is selected from the group consisting of H and alkyl groups of up to 6 carbon atoms, cyclohexyl, and phenyl when m is 0, and the group consisting of H and alkyl of up to 3 carbon atoms when m is 1, with a steroid drug having a group containing an active hydrogen atom, said polymerization being conducted under a dry inert atmosphere in the presence of a polymerization catalyst and at a temperature of from 80° to 130° C. for a time sufficient to obtain a polymerization product having an inherent viscosity of at least 0.3 at 0.1% concentration in chloroform or hexafluoroisopropanol at 25° C., and thereafter cooling said polymerization product to obtain a solid polymer-drug product.

4,328,205

INHIBITION OF CORROSION OF ALUMINIUM TUBES BY TOOTHPASTES

Charles J. Taylor, London, England, assignor to Beecham Group Limited, England

Continuation of Ser. No. 46,786, Jun. 8, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 230,688

Claims priority, application United Kingdom, Jul. 12, 1978, 29588/78

Int. Cl.[3] **A61K** *7/18, 7/16*

U.S. Cl. 424—52 **11 Claims**

1. A method of inhibiting corrosion of unlined aluminium tubes by clear or translucent gel toothpastes comprising a fluoride source and a silica thickener, which method comprises the incorporation in the toothpaste of at least 0.01% by weight, based on the weight of toothpaste, of sodium or potassium hydroxide or sodium or potassium carbonate, so that the pH of the toothpaste is at least 8.5.

4,328,206

METHOD OF ATTRACTING AND DESTROYING TOBACCO BEETLES WITH ALKYL PHENETHYLETHERS

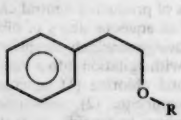
Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,750

Int. Cl.[3] **A01N** *25/00, 45/00, 29/04*

U.S. Cl. 424—84 **1 Claim**

1. A method of attracting and destroying *Lasioderma sericorne* (F.) comprising applying to an area contaminated with said *Lasioderma sericorne* (F.) at least one phenethylether defined according to the structure:



wherein R is isopropyl or 1,3-dimethylbutye, said attractant being applied to said area in an amount sufficient to attract said *Lasioderma serricorne* (F.).

4,328,207

PROCESS FOR PREPARING MOUSE INTERFERON

Kaname Sugimoto, Okayama, Japan, assignor to Ken Hayashibara, Okayama, Japan

Filed Dec. 27, 1979, Ser. No. 107,557
Int. Cl.[3] A61K *45/02, 39/00*
U.S. Cl. 424—85 3 Claims

1. In the process for producing mouse specific interferon comprising cultivating established mouse cells, exposing the resultant cells to the action of an interferon inducer to induce interferon, and collecting and purifying the interferon, the improvement wherein the established mouse cells are established mouse lymphoblastoid cell lines selected from the group consisting of L 5178 Y cell, L 1210 cell, OUMS-2 cell and JTC-11 cell, and wherein said cultivating step comprises transplanting the established mouse tumor cells into another non-mouse warm-blooded laboratory animal body, and wherein said exposing step is in vivo or in vitro.

4,328,208

VACCINE AGAINST CHLAMYDOUS INFECTIONS OF FARM ANIMALS

Ildus A. Kurbanov, Nauchny gorodok, 1, kv. 6; Rasikh K. Jusupov, Nauchny gorodok, 1, kv. 35, both of Kazan; Roman V. Borovik, ulitsa Lunacharskogo, 37, kv. 9, Serpukhov, Moskovskaya oblast; Talgat G. Gabdulkhaev, Nauchny gorodok, 2, kv. 11, and Ilmira A. Kurbanova, ulitsa Sibirsky trakt, 8, kv. 47, both of Kazan, all of U.S.S.R.

Filed May 20, 1981, Ser. No. 265,559
Int. Cl.[3] A61K *39/118, 31/78*
U.S. Cl. 424—88 3 Claims

1. A vaccine against chlamydous infections of farm animals consisting of an inactivated suspension of cells of yolk sacks of chicken embryos infected with a chlamydous infectant in a physiological solution or a phosphate buffer solution and an adjuvant; the latter being an aqueous solution of a mixture of tris-hydroxymethylaminomethane and tetramethylethlene diamine, an aqueous solution of a mixture of acrylamide and methylbisacrylamide, an aqueous solution of ammonium persulphate and an aqueous solution of glutaric aldehyde, the components being present in the following proportions, ml:

antigenous liquid of inactivated suspension of cells of yolk sacks of chicken embryos infected with chlamydous infectant	8 to 10
aqueous solution of a mixture of tris-hydroxymethylaminomethane and tetramethylethylene diamine in a weight ratio of 15:1 to 16:1 respectively	1 to 2
aqueous solution of a mixture of acrylamide and methylbisacrylamide in a weight ratio of 37:1 to 38:1 respectively	3 to 4
1.4% aqueous solution of ammonium persulphate	1 to 2
25% aqueous solution of glutaric aldehyde	0.026 to 0.028
physiological solution or phosphate buffer solution in an amount equal to	the total amount of the above components.

4,328,209

CHOLERA VACCINE

Richard A. Finkelstein, and Takeshi Honda, both of Dallas, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Apr. 11, 1979, Ser. No. 29,092
Int. Cl.[3] A61K *39/106;* C12N *15/00, 1/36;* C12R *1/63*
U.S. Cl. 424—92 2 Claims

1. A live, attenuated E1 Tor biotype, Ogawa serotype *Vibrio cholerae* vaccine comprising the mutant "Texas Star" or "Texas Star SR" *Vibrio cholerae* bacteria assigned accession No. ATCC 31503 and 31498 and both deposited without restriction with American Type Culture Collection, Rockville, Maryland, dispersed in a physiologically acceptable medium, which bacteria produce the nontoxic, highly immunogenic B portion of the cholera enterotoxin in substantially the same amount as virulent *Vibrio cholerae* bacteria while being substantially free of the A portion of the cholera enterotoxin capable of activating adenylate cyclase in a host cell.

4,328,210

MODIFIED PASTEURELLA BACTERIA AND VACCINES PREPARED THEREFROM

Carrell J. Kucera, Lincoln, Nebr., assignor to Norden Laboratories, Inc., Lincoln, Nebr.

Division of Ser. No. 135,828, Mar. 31, 1980, Pat. No. 4,293,545. This application Apr. 17, 1981, Ser. No. 255,143
Int. Cl.[3] A61K *39/02, 39/102*
U.S. Cl. 424—92 8 Claims

1. A combination modified live Pasteurella vaccine capable of inducing immunity in bovine, porcine and ovine animal species without serious side effects comprising vaccinal amounts of modified *Pasteurella multocida* and *Pasteurella haemolytica* bacteria obtained by chemical modification of virulent *Pasteurella multocida* strain ATCC No. 31609 and *Pasteurella haemolytica* strain ATCC No. 31611 with an acridinium salt, and a carrier therefor.

4,328,211

ANTIBIOTIC ACTINOMADURA-L-31 A, B

Hideo Sugawara; Yukio Miyazaki, and Akio Seino, all of Tokyo, Japan, assignors to Kaken Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,359
Claims priority, application Japan, Feb. 15, 1980, 55-16647
Int. Cl.[3] A61K *35/00*
U.S. Cl. 424—117 3 Claims

1. Antibiotic Actinomadura-L-31 A having the characteristics as the hydrochloride salt:
appearance: white or pale yellow powder
melting point: non-clear melting point
specific rotation: $[\alpha]_D^{25} - 34°$ (C: 0.5, pH: 7.5 water)
elementary analysis: (found) C: 51.71%; H: 6.23%; O: 21.03%; N: 13.94%; S: 5.82%; Cl: 1.17%
constitutive aminoacids: aspartic acid; glutamic acid; glycin; valine; phenylalanine; histidine; leucine; tryptophan
ultraviolet absorption spectrum: FIG. 1, maximum absorption:
280 nm: $E_{1\ cm}^{1\%} = 45.2$
290 nm: shoulder $E_{1\ cm}^{1\%} = 38$
infrared spectrum: FIG. 2, absorption (cm^{-1}) 3350, 3050, 2950, 1660, 1530, 1430, 1395, 1340, 1255, 1235, 1100, 745, 700.

4,328,212

NOVEL ANTIBIOTIC NCS-C AND PREPARATION METHOD OF THE SAME

Yoshio Koide, Tokyo; Kiyoto Edo, Miyagi, and Nakao Ishida, Sendai, all of Japan, assignors to Kayaku Antibiotic Research Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1980, Ser. No. 173,016
Claims priority, application Japan, Oct. 9, 1979, 54/130181
Int. Cl.[3] A61K *35/00*
U.S. Cl. 424—118 1 Claim

1. Antibiotic NCS-C or free acid salts thereof, the hydrochloric acid salt having the following physical and chemical characteristics:
(a) appearance: light yellowist-brownish powder
(b) decomposition point: 125° C.
(c) specific rotation: $[\alpha]_D^{20} = -171°$ ($c = 1.4 \times 10^{-3}$, in methanol)
(d) elementary analysis: C 51.72, H 4.94, N 2.03, 031.00, Cl 10.31

(e) molecular weight: 686.5–688.5
(f) molecular formula: $C_{30}H_{33-35}Cl_2NO_{13}$
(g) ultraviolet absorption spectrum: shoulders at 240, 265, 274, 290, 305, and 330 nm
(h) infrared absorption spectrum: absorptions at 3400, 1780, 1610, 1400, 1190, 1080 and 1010 cm^{-1}
(i) color reactions: permanganate reaction, diazo coupling reaction-positive, xanthoprotein reaction, Ehrlich reaction, Ninhydrin reaction, orcinol reaction, Molisch reaction-negative
(j) solubility: readily soluble in methanol, ethanol, propanol, and butanol, soluble in acetone; slightly soluble in ethyl acetate; hardly soluble in water, ether and benzene.

4,328,213

STABLE INJECTABLE LABETALOL FORMULATION

Varda Ecker, New York, N.Y.; Yogendra M. Shah, Piscataway, and Imtiaz A. Chaudry, Denville, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Nov. 28, 1979, Ser. No. 98,166
Int. Cl.³ A61K *47/00, 31/165, 31/615, 31/36*
U.S. Cl. 424—173 **10 Claims**

1. A stable injectable pharmaceutical formulation which comprises, per ml of solution
3–5 mg pharmaceutically acceptable acid addition salt of labetalol, or any of its four isomers or mixtures thereof;
10–60 mg non-ionic isotonic agent;
0.1–2.0 mg paraben preservative or mixtures thereof;
sufficient organic acid to obtain a pH of 3.0–4.0;
water for injection q.s. 1.0 ml.

3. A formulation according to claim 1 wherein the non-ionic isotonic agent is dextrose.

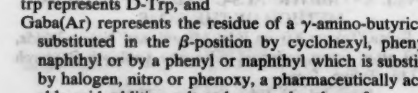
4,328,214

CYCLOPEPTIDES AND PHARMACEUTICAL PREPARATIONS THEREOF AND ALSO PROCESSES FOR THEIR MANUFACTURE

Hans Rink, Riehen; Peter Sieber, Reinach, and Bruno Kamber, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 25, 1980, Ser. No. 162,712
Claims priority, application Switzerland, Jul. 4, 1979, 6243/79; Feb. 12, 1980, 1135/80
Int. Cl.³ A61K *37/00;* **C07C** *103/52*
U.S. Cl. 424—177 **15 Claims**

1. A cyclic octapeptide of the formula



in which
trp represents D-Trp, and
Gaba(Ar) represents the residue of a γ-amino-butyric acid substituted in the β-position by cyclohexyl, phenyl or naphthyl or by a phenyl or naphthyl which is substituted by halogen, nitro or phenoxy, a pharmaceutically acceptable acid addition salt and a complex thereof.

4,328,215

METHOD OF REDUCING OR AVOIDING THE MUTAGENIC ACTIVITY OF DRUGS

Ernest Bueding, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed May 9, 1977, Ser. No. 795,086
Int. Cl.³ A61K *31/71, 37/00, 31/625, 31/47, 31/415*
U.S. Cl. 424—181 **9 Claims**

1. A method for reducing or avoiding the formation of a mutagenic metabolite from a drug which is transformed into a mutagenic metabolite by intestinal bacterial flora in man or other animal to whom said drug is administered in therapeutically effective amount, and whose therapeutic or prophylactic activity is dissociated from any mutagenic activity thereof, said method comprising orally administering an antibacterial agent, which is effective against said intestinal bacterial flora, to said man or animal in conjunction with the administration of said drug, the amount of antibacterial agent so administered being sufficient to reduce said flora and thereby avoid or reduce the formation of said mutagenic metabolite from said drug by said flora and being within the range of 5 mg to 50 mg per kg body weight of said man or other animal.

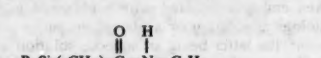
4,328,216

NOVEL ORGANOSILICON COMPOUNDS AND ANTI-TUMOR AGENTS CONTAINING THE SAME

Shigeshi Toyoshima, Funabashi; Ryuichi Sato, Gunma; Koichi Ito, Higashi-Kurume; Toshio Shinohara, Annaka; Yasushi Yamamoto, Takasaki, and Shoji Ichinohe, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 102,225
Claims priority, application Japan, Dec. 19, 1978, 53-160326
Int. Cl.³ A61K *31/695;* **C07F** *7/10*
U.S. Cl. 424—184 **8 Claims**

5. An agent for inhibiting of melanoma and Lewis lung cancer comprising an ω-triorganosilyl-substituted linear alkanoic acid anilide represented by the formula



where R is a monovalent hydrocarbon group having from 1 to 10 carbon atoms unsubstituted or substit and n is an integer from 1 to 5, in a therapeutically effective amount and a carrier therefor.

4,328,217

BRAN TABLET COMPOSITION AND PROCESS

John L. Gabby; Gerald K. Ashby; Dennis W. Cameron, and Richard C. Theuer, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation of Ser. No. 450,539, Mar. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 319,252, Dec. 29, 1972, abandoned. This application Apr. 2, 1975, Ser. No. 564,409
Int. Cl.³ A61K *35/78, 33/42, 33/10, 31/70*
U.S. Cl. 424—195 **6 Claims**

1. A process for preparing a pharmaceutical bran tablet for oral administration as a bulk cathartic agent comprising the steps of:
mixing comminuted bran with that amount of sucrose syrup which provides a uniform wet mix which is damp in appearance;
extruding the wet mix from a screw type extruder under pressure to provide a damp extrudate;
drying the damp extrudate to provide a dry extrudate containing about 3% water;
grinding the dry extrudate to provide a dry granulated mix; and
tableting the dry granulated mix to provide tablets of sufficient hardness to withstand routine packaging and handling procedures.

4,328,218

METHOD FOR THE TREATMENT OF CELLS OF *STREPTOCOCCUS PYOGENES*

Mikio Sotomura; Seiichi Iwamoto; Teruo Sawada; Shintaro Inoue, all of Osaka; Akira Suzuki, Tondabayashi, and Yoshiaki Ikeda, Osaka, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,711

Claims priority, application Japan, Dec. 4, 1979, 54-157643

Int. Cl.[3] A61K *35/78, 35/00, 39/02*

U.S. Cl. 424—195 7 Claims

1. A method for treating cells of *Streptococcus pyogenes* having an anti-tumor activity which comprises

(1) treating the cells with hydrogen peroxide at a temperature in the range of −5° C. to 10° C. or with a monohydric alcohol having carbon numbers of 1–12 at a temperature in the range of −5° C. to 45° C. to pasteurize the cells,

(2) suspending the pasteurized cells in a penicillin-containing aqueous medium at a temperature of 10° C. to 50° C.,

(3) lyophilizing the cells,

(4) washing the lyophilized cells with an aqueous medium at a temperture of not more than 30° C. to remove the penicillin from the cells, and

(5) lyophilizing the thus obtained cells.

4,328,219

2-SUBSTITUTED BENZAZOLE PESTICIDE SYNERGISTS

Volker Mues, Wuppertal, and Wolfgang Behrenz, Overath, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

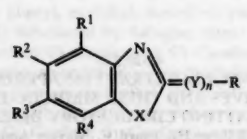
Filed Mar. 12, 1980, Ser. No. 129,853

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2913527

Int. Cl.[3] A01N *43/76, 43/78;* C07D *263/58, 277/68*

U.S. Cl. 424—200 7 Claims

1. A synergistic insecticidally or acaricidally active composition comprising (a) at least one insecticidally or acaricidally active compound, and (b) an amount, sufficient to render the composition pesticidally active, of a 2-substituted benzazole of the formula



in which

R represents optionally substituted alkyl, alkenyl or alkynyl,

R^1, R^2, R^3 and R^4 independently of one another represent hydrogen or halogen,

X and Y independently of one another represent oxygen or sulphur and

n represents zero or 1.

7. A method of combating pests which comprises applying to such pests or to a habitat thereof a pesticidally effective amount of a composition according to claim 1.

4,328,220

NON-DUSTY PULVERULENT AND GRANULATED ORGANIC DYE PREPARATIONS

Heinz Abel, Reinach; Beat Bruttel, Möhlin, and Arthur Bühler, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 870,900, Jan. 19, 1978, abandoned. This application Jun. 13, 1980, Ser. No. 159,257

Claims priority, application Luxembourg, Jan. 24, 1977, 76632

Int. Cl.[3] D06P *1/10, 1/645, 1/90*

U.S. Cl. 424—226 27 Claims

1. A non-dusting pulverulent or granulated dye preparation consisting essentially of

(1) an organic dye which is a metal-free, metal-containing or metallizable mono-, bis- or polyazo dye or an athraquinone, nitro, methine, acid triphenylmethane, xanthone, naphthazarine, quinophthalone or phthalocyanine dye;

1 to 20 percent by weight of a mixture of component (2) and at least one of components (3) or (4), wherein component

(2) is a nonionic hydrotropic compound which is a reaction product adduct

(i) having a molecular weight of about 2,000 to 7,000 of

(a_1) a monohydric to hexahydric alkanol of 1 to 6 carbon atoms, a monoalkyl- or monoalkylol-monoamine of 1 to 6 carbon atoms, or a polyalkylenepolyamine of the formula

$$H_2N(CH_2CH_2NH)_rCH_2CH_2NH_2$$

(wherein r is 0 to 3, and a_2) 1,2-propylene oxide;

(ii) of a water-insoluble saturated or unsaturated, branched or straight chain aliphatic monoalcohol of 8 to 18 carbon atoms and ethylene oxide, 1,2-propylene oxide or mixtures thereof;

(iii) of phenylphenol or an alkylphenol having 4 to 12 carbon atoms in the alkyl moiety thereof, and ethylene oxide, 1,2-propylene oxide or mixtures thereof;

(iv) of an alkylene dicarboxylic acid having 3 to 10 carbon atoms, and 1,2-propylene oxide or polypropylene glycol;

(v) of a fatty acid having 10 to 18 carbon atoms, and 1,2-propylene oxide or polypropylene glycol;

(vi) of a fatty acid having 10 to 18 carbon atoms, a trihydric to hexahydric alkanol having 3 to 6 carbon atoms and 1,2-propylene oxide; or

(vii) of a fatty acid having 10 to 18 carbon atoms, a polyalkylenepolyamine of the formula

$$H_2N(CH_2CH_2NH)_rCH_2CH_2NH_2$$

wherein r is 0 to 3, and 1,2-propylene oxide;

(3) is a reaction product condensate of a fatty acid having 8 to 22 carbon atoms and 1 to 2 moles, per mole of fatty acid of diethanolamine;

(4) is an anionic compound of the formula

$$R-A-CH_2CHO)_m-X$$
$$\quad\quad\quad

dyestuff formulating agents selected from the group consisting of inorganic salts, sodium benzenesulphonate, lignin sulphonates, dinaphthylmethanedisulphonates, sugars, dextrin, urea, ethylene oxide adducts or fatty amines, ethylene oxide adducts of polyalkylenepolyamines, foam control assistants, fungal growth inhibitors, bacterial growth inhibitors and anti-dusting agents.

4,328,221

SUBSTITUTED STEROID-SPIRO-OXAZOLIDINONE DERIVATIVES AND A PROCESS FOR THE PREPARATION THEREOF

Katalin Szilagyi nee Farago; Sandor Solyom; Lajos Toldy; Inge Schäfer; Eleonora Szondy; Janos Borvendeg, and Ilona Hermann nee Szente, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

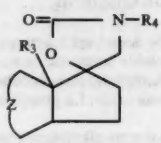
Filed Dec. 24, 1980, Ser. No. 220,139

Claims priority, application Hungary, Dec. 28, 1979, GO 1463

Int. Cl.³ A61K *31/58*

U.S. Cl. 424—241 **13 Claims**

1. A compound of the formula (I)

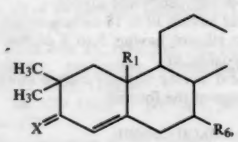


wherein

R_3 and R_4 are each C_1 to C_3 alky; and

Z is one of the following groups

(a)



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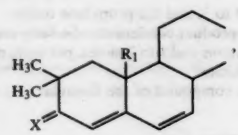

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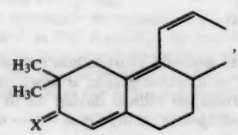
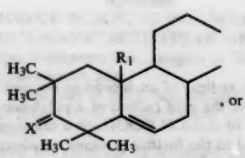


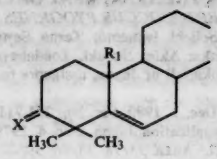
(d)



, or

-continued

(e)



wherein

R_1 is hydrogen or methyl;

R_6 is hydrogen, C_1 to C_3 alkylthio or C_2 to C_4 acylthio; and

X is oxo, hydroxyimino, C_1 to C_3 alkoxyimino, carboxy-alkoxyimino wherein the alkoxy has 2 to 4 carbon atoms or a salt-converted carboxy-alkoxy-imino wherein the alkoxy has 2 to 4 carbon atoms.

13. A method of treatment of a disorder in an animal subject characterized by hyperaldosteronism which comprises administering to said subject an effective amount of a compound as defined in claim 1.

4,328,222

PHARMACEUTICAL COMPOSITIONS FOR PARENTERAL OR LOCAL ADMINISTRATION

Dieter Schmidt, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 94,813, Nov. 16, 1979, Pat. No. 4,271,196. This application Jan. 19, 1981, Ser. No. 225,880

Claims priority, application Switzerland, Nov. 21, 1978, 11921/78

Int. Cl.³ A61U *31/33, 31/685, 47/00*

U.S. Cl. 424—244 **12 Claims**

1. An aqueous pharmaceutical composition suitable for parenteral or local administration which comprises pharmaceutical adjuvants, a micelle-forming agent comprising a combination of dihexanoyl lecithin and a non-hemolytic lipid selected from the group consisting of egg lecithin, soya lecithin, dipalmitoyl lecithin, dimyristoly lecithin, phosphatidyl inositol, monoolein and monolineolein wherein the mole ratio of non-hemolytic lipid to dihexanoyl lecithin is in the range of 1:3 to 1:1 and one or more benzodiazepines which are insoluble or slightly soluble in water wherein the amount of benzodiazepine ranges from about 0.1 mg/ml to about 20 mg/ml of solution.

4,328,223

2-AMINO-3A,4,5,6-TETRAHYDRO-PERIMIDINE DERIVATIVES AND THEIR MEDICINAL USE IN COMBATTING CIRCULATORY DISEASES

Hans-Joachim Kabbe; Hildegard E. Mayer; Annedore Mayer; Andrea Mayer; Heinz Ziemann, all of Leverkusen, and Kurt Stoepel, Wuppertal-Elberfeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

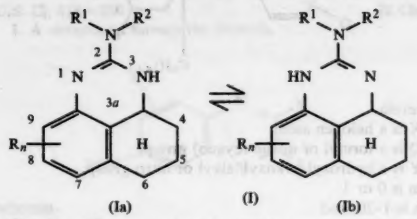
Filed Apr. 5, 1979, Ser. No. 27,538

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816123; Sep. 8, 1978, 2839137

Int. Cl.³ A61K *31/506, 31/54;* C07D *239/70, 403/04*

U.S. Cl. 424—246 **18 Claims**

1. A 2-amino-3a,4,5,6-tetrahydroperimidine derivative of the tautomeric formulae



(Ia) (I) (Ib)

or a salt thereof,

in which

R denotes a hydrogen or halogen atom, n is 1 or 2,

R^1 denotes a hydrogen atom or a C_1–C_8—alkyl group or a phenyl group and

R^2 denotes a hydrogen atom or a C_1–C_8—alkyl group which is optionally substituted by a 5-membered or 6-membered saturated or unsaturated aliphatic ring which can contain 1 or 2 identical or different N—R′ groups,

in which

R′ denotes a hydrogen atom, a C_1–C_4-alkyl group, a benzyl group, an alkanoyl group having up to 4 carbon atoms, or a benzyl, phenethyl, phenylpropyl, phenyl or chlorophenyl group,

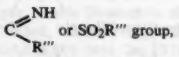
or

R^1 and R^2 together denote an alkylene group having up to 6 carbon atoms which is optionally interrupted by oxygen or by the group $S(O)_{n'}$ or N-R″ which together with the nitrogen atom form a 5-or 6-membered ring

in which

n′ is 0, 1 or 2 and

R″ denotes a hydrogen atom or a C_1—C_4—alkyl group, a phenyl, fluorophenyl, naphthyl, benzyl or phenethyl group, or a —COR‴, CSR‴,



or SO_2R''' group,

wherein

R‴ denotes a C_1–C_4—alkyl group, a C_3–C_7 cycloalkyl group; a phenyl, naphthyl, benzyl or phenethyl group optionally substituted by halogen, nitro, cyano, C_1–C_4—acylamino, C_1–C_4-alkyl or C_1–C_4-alkoxy, a C_1–C_4-alkoxy group, an amino, mono- or di-alkylamino with 1 to 4 carbon atoms in each alkyl group, or a phenylamino group optionally substituted by amino, C_1–C_4-acylamino, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, cyano or nitro.

10. A pharmaceutical composition containing as an active ingredient an antihypertensively effective amount of a compound according to claim **1** in admixture with a solid or liquefied gaseous diluent or in admixture with a liquid diluent other than a solvent of a molecular weight less than 200 except in the presence of a surface-active agent.

15. A method of combating circulatory diseases in warm-blooded animals which comprises administering to said animals an antihypertensively effective amount of an active compound according to claim **1** either alone or in admixture with a diluent or in the form of a medicament.

4,328,224

CEPHALOSPORIN DERIVATIVES

Nobuhiro Oi, Hoya; Bunya Aoki, Tama; Teizo Shinozaki, Matsudo; Kanji Moro, Kuki; Isao Matsunaga, Tokyo; Takao Noto, Machida; Toshiyuki Nebashi, Kawagoe; Yusuke Harada, Tokyo; Hisao Endo, Yokohama; Takao Kimura, Chiba; Hiroshi Okazaki, Sayama; Haruki Ogawa, Chofu, and Minoru Shindo, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

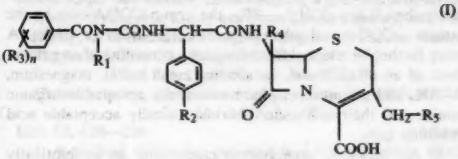
Division of Ser. No. 47,781, Jun. 11, 1979, Pat. No. 4,298,605. This application Mar. 28, 1980, Ser. No. 136,063

Claims priority, application Japan, Jun. 22, 1978, 53-74868; Sep. 11, 1978, 53-110627; Apr. 26, 1979, 54-50841

Int. Cl.³ C07D *501/20*

U.S. Cl. 424—246 **4 Claims**

1. A cephalosporin derivative represented by the formula



(I)

wherein R_1 is a hydrogen atom or a lower alkyl group; R_2 is a hydrogen atom; R_3 is a hydroxyl group or a lower alkanoyloxyl group; n is 2 or 3; at least two of R_3 are bonded to adjacent carbon atoms, the position of substituent R_3 being selected from 3 to 5 position when R_1 is a lower alkyl group and R_3 is a hydroxyl group, and 2 to 6 position when R_1 and R_3 are other substituents; R_4 is a methoxyl group; and R_5 is an acetoxyl group or a salt pharmaceutically acceptable thereof.

4,328,225

NOVEL 7-(2-AMINO-4-THIAZOLYL)-ACETAMIDO-CEPHALOSPORANIC ACIDS

Michel Vignau, Neuilly-sur-Seine, and Rene Heymes, Romainville, both of France, assignors to Roussel Uclaf, Paris, France

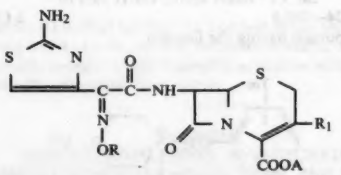
Filed Jul. 10, 1980, Ser. No. 167,449

Claims priority, application France, Jul. 19, 1979, 79 18702

Int. Cl.³ A61K *31/545*

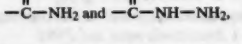
U.S. Cl. 424—246 **15 Claims**

1. A compound selected from the group consisting of a syn isomer of a compound of the formula

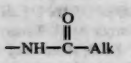


I

wherein R is selected from the group consisting of $—(CH_2)_n—S—R_2$, $—CHF_2$ and $—(CH_2)_n—S—CN$, R_2 is selected from the group consisting of optionally protonated



n is an integer from 1 to 4, R_1 is selected from the group consisting of hydrogen, chloro, methoxy, alkyl and alkylthio of 1 to 5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms, azidomethyl, acetoxymethyl, carbamoyloxymethyl,



and —CH_2—S—R', Alk is alkyl of 1 to 4 carbon atoms, R' is selected from the group consisting of an acyl of an aliphatic acid of 2 to 4 carbon atoms and a member selected from the group consisting of 1,2,3-thiadiazolyl, 1,2,5-thiadiazolyl, 1,2,4-thiadiazolyl, 1,3,4-thiadiazolyl, 1-H-tetrazolyl, 1,3-thiazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,3,4-triazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl and 1,3,4-oxadiazolyl optionally substituted with at least one member of the group consisting of methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, amino, hydroxycarbonylmethyl, dimethylaminoethyl and diethylaminoethyl, A is selected from the group consisting of hydrogen and an easily cleavable ester and when R is —$(CH_2)_n$—SR_2, the group COOA may be the anion —COO^- and when R is —(CH_2)—SCN or CHF_2, A may further be selected from the group consisting of an equivalent of an alkali metal, an alkaline earth metal, magnesium, —NH_4 and a non-toxic, pharmaceutically acceptable organic amine and their non-toxic, pharmaceutically acceptable acid addition salts.

6. An antibiotic composition comprising an antibiotically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

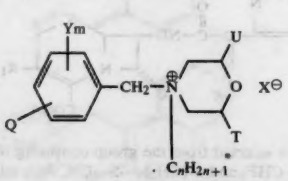
4,328,226

QUATERNARY BENZYLMORPHOLINE SALTS HAVING FORMYL OR NITRILE SUBSTITUENTS IN A RING AND FUNGICIDAL COMPOSITIONS

Stanislaw Witek; Damian Grobelny, both of Wroclaw; Jadwiga Gorska-Poczopko, Jablonna/k Warszawy; Edmund Bakuniak, Warszawa; Irena Bakuniak, Warszawa, and Janina Ptaszkowska, Warszawa, all of Poland, assignors to Instytut Przemyslu Organicznego & Politechnika Wroclawska, Poland

Continuation-in-part of Ser. No. 42,406, May 25, 1979, abandoned, which is a division of Ser. No. 954,305, Oct. 24, 1978, abandoned. This application Apr. 3, 1980, Ser. No. 136,764
Claims priority, application Poland, Nov. 16, 1977, 202199
Int. Cl.[3] A01N *43/84;* C07D *295/10*
U.S. Cl. 424—248.4 2 Claims

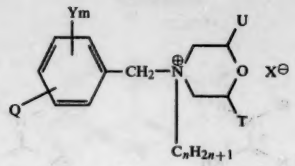
1. Compounds having the formula:



where:

X is a halogen atom
Q is a formyl or nitrile (cyano) group
Y is a hydroxyl, alkoxyl, alkyl or nitro group
"m" is 0 or 1
"n" equals 1–20
U and T are methyl radicals or hydrogen atoms.

2. A fungicidal composition wherein the active ingredient has the general formula:



wherein

X is a halogen atom,
Q is a formyl or nitrile (cyano) group,
Y is a hydroxyl, alkoxyl, alkyl or nitro group,
m is 0 or 1,
n is 1–20, and
U and T are methyl radicals or hydrogen atoms, together with a carrier selected from the group consisting of kaolin, kieselguhr, bentonite, talc, grain flour, wood bark flour, walnut shell flour and powdered chitin, the concentration of said active ingredient in use being from 1 to 100 ppm.

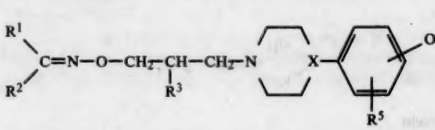
4,328,227

NOVEL O-PROPYLOXIMES

Gebert Ulrich, Kelkheim; Werner Thorwart, Wiesbaden; Jaromir Komarek, Wiesbaden; Carl Cartheuser, Wiesbaden; Kurt Popendiker, Wiesbaden, and Heinz-Günther Greve, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 864,008, Dec. 23, 1977. This application May 19, 1980, Ser. No. 150,705
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658938
Int. Cl.[3] A61K *31/495;* C07D *401/12, 405/12, 403/12*
U.S. Cl. 424—250 6 Claims

1. A compound of the formula I



and the physiologically acceptable salts thereof wherein

R^1 represents pyridyl; imidazolyl substituted by alkyl or phenylalkyl, each having up to two carbon atoms in the alkyl moiety; indolyl; 5-methoxy-indolyl; chromonyl; naphthyl; phenyl or phenyl substituted by from 1 to 3 substituents selected from the group consisting of alkyl and alkoxy each having up to 6 carbon atoms, haloalkyl with up to 2 carbon atoms, halogen, cyano, nitro, hydroxy and amino, which amino may be substituted by one or two alkyl groups each having up to 2 carbon atoms, and a methylenedioxy group;
R^2 represents hydrogen;
R^3 represents hydroxy;
R^4 represents a member of the group consisting of hydrogen, methyl and ethyl, the radical OR^4 being in 2 or 4 position;
R^5 represents hydrogen, halogen, alkoxy having up to two carbon atoms or hydroxy and
X represents nitrogen.

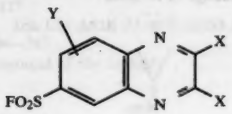
4,328,228

2,3-DIHALO-6-QUINOXALINESULFONYL FLUORIDES

John B. Adams, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 8, 1980, Ser. No. 167,431
Int. Cl.[3] C07D *241/44;* A01N *43/60*
U.S. Cl. 424—250 21 Claims

1. A compound having the formula



I

wherein

X is F or Cl;

Y is Cl, Br, CH_3O, NO_2 or CH_3.

8. A fungicidal composition comprising a fungicidally effective amount of a compound of claim 1 and at least one of (a) a surfactant and (b) a suitab'e diluent.

15. An insecticidal composition comprising an insecticidally effective amount of a compound of claim 1 and at least one of (a) a surfactant and (b) a suitable diluent.

4,328,229

ANTI-CANCER COMPOSITION FOR DELIVERING 5-FLUOROURACIL TO CANCER TISSUES

Setsuro Fujii, Toyonaka; Norio Unemi, and Setsuo Takeda, both of Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 891,343, Mar. 29, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,161
Int. Cl.[3] A61K *31/505*
U.S. Cl. 424—251 8 Claims

8. A method of delivering 5-fluorouracil to a cancer sensitive to 5-fluorouracil in a warm-blooded animal, the method comprising administering to the animal 1-(2-tetrahydrofuryl)-5-fluorouracil and uracil in separate doses, wherein about 0.5 to about 10 mols of uracil is used per mol of 1-(2-tetrahydrofuryl)-5-fluorouracil, in an amount which is effective to deliver an anti-cancer effective amount of 5-fluorouracil to the cancer.

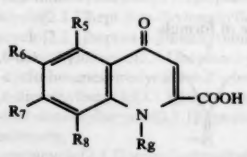
4,328,230

N-SUBSTITUTED-QUINOLIN-4-ONE-2-CARBOXIC ACID DERIVATIVES

Roger C. Brown; Hugh Cairns, both of Loughborough, and Anthony R. Payne, Castle Donington, all of England, assignors to Fisons Limited, London, England

Division of Ser. No. 635,615, Nov. 26, 1975, Pat. No. 4,156,726. This application Mar. 5, 1979, Ser. No. 17,612
Claims priority, application United Kingdom, Dec. 7, 1974, 53005/74; Dec. 7, 1974, 53010/74; Dec. 7, 1974, 53011/74
Int. Cl.[3] A61K *31/47;* C07D *215/58*
U.S. Cl. 424—256 8 Claims

1. A compound of the formula I,



I

in which

R_5 and R_6, which can be the same or different, each represent hydrogen, alkyl, halogen, hydroxy, alkenyl, phenyl, alkoxy, alkenyloxy or phenylalkoxy; the alkyl, alkenyl, phenyl, alkoxy, alkenyloxy and phenylalkoxy groups optionally being substituted by a hydroxy, alkoy, phenyl or halo group or by a 5 or 6 membered heterocyclic ring having 4 or 5 carbon atoms and one oxygen atom;

R_5 and R_6, when they have carbon, each having 1–8 carbon atoms,

R_7 and R_8 form a chain —COCH=C(COOH)NRh—,

Rg and Rh, which can be the same or different, are alkyl, alkenyl, phenyl-alkyl, alkanoyl, benzoyl or phenylalkanoyl, each having up to 10 carbon atoms,

and pharmaceutically acceptable salts, esters and amides thereof.

7. A pharmaceutical composition comprising a compound according to claim 1 in admixture with a pharmaceutically acceptable adjuvant, diluent or carrier.

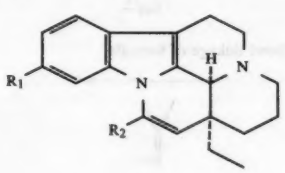
4,328,231

METHOD OF TREATING PSORIASIS

Maria Zajer nee Balazs; Lilla Forgach; Egon Karpati; Arpad Kiraly; Gyöngyver Kiraly nee Soos; Laszlo Szporny, and Bela Rosdy, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Jul. 25, 1980, Ser. No. 172,169
Claims priority, application Hungary, Aug. 16, 1979, RI 724
Int. Cl.[3] A61K *31/435*
U.S. Cl. 424—256 4 Claims

1. A method of treating psoriasis in a human patient which comprises the step of topically or parenterally administering a dermatological composition, containing a dermatologically effective amount of a compound of the formula I



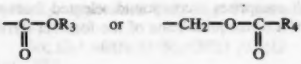
wherein

R_1 is hydrogen and

R_2 is the group —$COOCH_3$, —$CONH_2$, or —$CONHNH_2$; or

R_1 is methoxy and

R_2 is a group



wherein R_3 is alkyl having 1 to 5 carbon atoms and R_4 is alkyl having 1 to 4 carbon atoms or trimethoxyphenyi, or a pharmaceutically acceptable salt thereof in admixture with a pharmaceutically acceptable inert carrier.

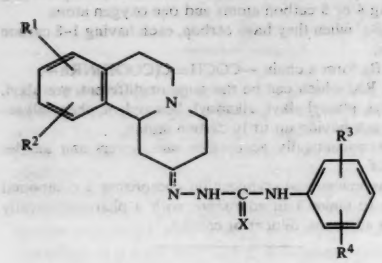
4,328,232

BENZOQUINOLIZINES, ANTI-SECRETORY COMPOSITIONS CONTAINING THEM, AND METHODS OF TREATING ULCERS EMPLOYING THEM

Terence J. Ward, Slough, and John F. White, Wokingham, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Filed Oct. 27, 1980, Ser. No. 201,661
Claims priority, application United Kingdom, Nov. 7, 1979, 38570/79
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.[3] A61K *31/47;* C07D *455/06*
U.S. Cl. 424—258 7 Claims

1. A compound selected from the group consisting of a benzoquinolizine of the formula (I)



(I)

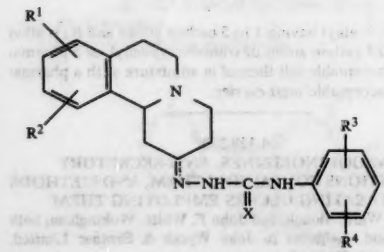
and a pharmaceutically acceptable acid addition salt thereof, wherein the

linkage represents a single bond linkage of the formula

or a double bond linkage of formula

R^1 and R^2 which may be the same or different each represent hydrogen, lower alkyl, lower alkoxy or halogen, R^3 and R^4 which may be the same or different each represent hydrogen, halogen, lower alkyl, lower alkoxy, nitro, amino, lower alkylamino, di(lower)alkylamino or trifluoromehyl and X is O, S or NH.

6. A pharmaceutical composition having anti-secretory activity which comprises a compound selected from the group consisting of a benzoquinolizine of the formula (I)



(I)

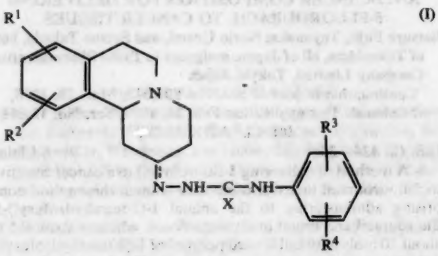
and a pharmaceutically acceptable acid addition salt thereof, where in the

linkage represents a single bond linkage of formula

or a double bond linkage of formula

R^1 and R^2 which may be the same or different each represent hydrogen, lower alkyl, lower alkoxy or halogen, R^3 and R^4 which may be the same or different each represent hydrogen, halogen, lower alkyl, lower alkoxy, nitro, amino, lower alkylamino, di(lower)alkylamino or trifluoromethyl and X is O, S or NH.

7. A method of treating ulcers in warm blooded mammal which comprises administering to said mammal an antisecretory effective amount of a compound selected from the group consisting of a benzoquinolizine of the formula (I)



(I)

and a pharmaceutically acdeptable acid addition salt thereof, wherein the

linkage represents a single bond linkage of the formula

or a double bond linkage of formula

R^1 and R^2 which may be the same or different each represent hydrogen, lower alkyl, lower alkoxy or halogen, R^3 and R^4 which may be the same or different each represent hydrogen, halogen, lower alkyl, lower alkoxy, nitro, amino, lower alkylamino, di(lower)alkylamino or trifluoromethyl and X is O, S or NH.

4,328,233
α-GLUCOSIDASE INHIBITING 2-HYDROXYMETHYL-3,4,5-TRIHYDROXY-PIPERIDINES

Horst Böshagen, Haan; Rüdiger Sitt, and Ernst Truscheit, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

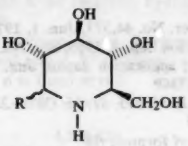
Filed Oct. 29, 1979, Ser. No. 88,990

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2848117

Int. Cl.³ A61K *31/445*; C07D *211/46*

U.S. Cl. 424—267 **22 Claims**

1. A compound of the formula



in which

R denotes C_1 to C_{30} alkyl, C_2 to C_{18} alkenyl or C_2 to C_{18} alkinyl optionally substituted by 1 to 5 radicals selected from halogen, C_1–C_4-alkoxy or nitro; C_3 to C_{12} cycloalkyl, C_3 to C_{12} cycloalkenyl, C_3 to C_{12} cycloalkadienyl, C_3 to C_{12} bicycloalkyl, C_3 to C_{12} bicycloalkenyl, C_3 to C_{12} bicycloalkadienyl, C_3 to C_{12} tricycloalkyl, C_3 to C_{12} tricycloalkenyl or C_3 to C_{12} tricycloalkadienyl; or phenyl or naphthyl being unsubstituted or having 1 to 5 substituents selected from halogen, C_1–C_4-alkyl, halogeno-C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylmercapto, C_1–C_4-alkylsulphonyl, nitro, cyano, di-C_1 to C_{12} alkylamino, di-C_1 to C_{12} alkylaminosulphonyl or di-C_1 to C_{12} dialkylaminocarbonyl.

13. A pharmaceutical composition containing as an active ingredient an amount effective for α-glucosidase inhibition, of a compound according to claim **1** in admixture with a solid or liquefied gaseous diluent other than a solvent of a molecular weight less than 200 except in the presence of a surface-active agent.

4,328,234
IMIDAZOLE DERIVATIVES AND SALTS THEREOF AND PHARMACEUTICAL FORMULATIONS USEFUL IN THROMBO-EMBOLIC DISORDERS

Peter B. Thorogood, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Feb. 21, 1980, Ser. No. 123,712

Claims priority, application United Kingdom, Feb. 22, 1979, 06243/79

Int. Cl.³ A61K *31/46, 31/445, 31/415*; C07D *451/02*

U.S. Cl. 424—265 **6 Claims**

3. A 1-substituted imidazole selected from

1-[2-(6,6-dimethylbicyclo[3.1.1]heptane-2-yl)ethyl]imidazole;

1-(bicyclo[2.2.1]hept-5-en-2-ylmethyl)imidazole;

1-(bicyclo[2.2.1]heptan-2-ylmethyl)imidazole;

1-(6,6-dimethylbicyclo[3.1.1]heptan-2-ylmethyl)imidazole;

1-(2-cyclo-hexenespirocyclobut-3′-ylmethyl)imidazole;

1-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-ylmethyl)imidazole;

1-[2-(3,3-dimethylbicyclo[2.2.1]heptan-2-ylidene)ethyl-]imidazole;

1-(4-azabicyclo[2.2.2]octan-2-ylmethyl)imidazole; and

1-(8-methyl-8-azabicyclo[3.2.1]octan-3-ylmethyl)imidazole or an acid addition salt thereof.

6. A pharmaceutical composition for use in thromboembolic disorders which comprises a non-toxic medicinally effective amount of a compound or salt of claim **3** in association with a pharmaceutically acceptable carrier.

4,328,235
SUPPRESSING PAIN WITH BENZOTHIAZOL-2(3H)-ONES

Günter Trummlitz, Warthausen; Wolfhard Engel, Biberach; Günther Schmidt, Biberach; Wolfgang Eberlein, Biberach; Ernst Seeger, Biberach; Günther Engelhardt, Biberach, and Rainer Zimmermann, Mittelbiberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

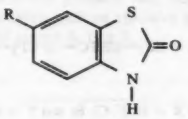
Filed Jun. 30, 1980, Ser. No. 163,965

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927352

Int. Cl.³ A61K *31/425*

U.S. Cl. 424—270 **5 Claims**

1. A method of suppressing pain in a host which comprises administering to a host in need of such treatment an effective amount of analgesic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and as active ingredient a benzothiazol-2(3H)-one of the formula



wherein R represents a hydrogen atom or a methyl, methoxy, or ethoxy group.

4,328,236
ISOXAZOLYL CARBOXANILIDES, AND THEIR USE FOR COMBATING FUNGI

Bernd Zeeh, Ludwigshafen; Hans Theobald, Limburgerhof; Eberhard Ammermann, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

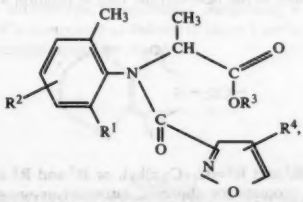
Filed Sep. 19, 1980, Ser. No. 188,681

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940189

Int. Cl.³ A01N *43/80*; C07D *261/12*

U.S. Cl. 424—272 **5 Claims**

1. An isoxazolylcarboxanilide of the formula



I

where R^1 is methyl, ethyl or chlorine, R^2 is hydrogen, methyl, ethyl, fluorine, chlorine or bromine, R^3 is methyl or ethyl, and R^4 is hydrogen, methyl or ethyl, with the proviso that where R^4 is other than hydrogen, the isoxazole is 3,5-disubstituted.

5. A process for combating fungi, wherein at least one isoxazolylcarboxanilide of the formula I as claimed in claim **1** is allowed to act on the fungi, or on areas, plants or seed threatened by fungus attack.

4,328,237
PYRETHROIDS

Paolo Piccardi; Francesco Corda, both of Milan; Franco Gozzo, San Donato Milanese; Augusto Menconi, and Angelo Longoni, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

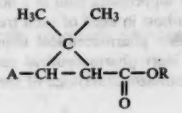
Filed Feb. 26, 1979, Ser. No. 15,105

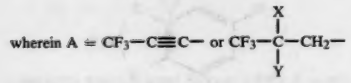
Claims priority, application Italy, Feb. 28, 1978, 20713 A/78; Jan. 30, 1979, 19703 A/79

Int. Cl.³ A01N *53/00*; **C07C** *69/743*

U.S. Cl. 424—274 **4 Claims**

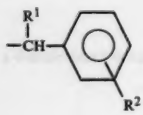
1. An ester of 2,2-dimethyl-cyclopropanecarboxylic acid having the formula:





(with X = H, F, Cl, Br and Y = Cl, Br)

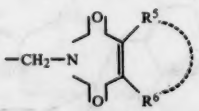
and R =



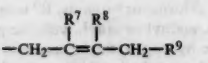
(wherein R^1 = H, CN, C≡CH and R^2 = 3-phenoxy, 3-benzyl, 4-allyl, 4-propargyl);

(wherein: R^1=H, CN, C≡CH, R^3=H, alkyl; R^4=benzyl, benzoyl, phenoxy, allyl, propargyl); Y'=O,S; group

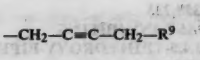
is bound to the heterocyclic ring in position 2 or 3; group R^3 is bound to the heterocyclic ring in position 3 or 2 and R^4 is bound to the heterocyclic ring in position 4 or 5):



(wherein: R^5 and R^6=C_1-C_3 alkyl, or R^5 and R^6 together form an aromatic or aliphatic, saturated or unsaturated, orthocondensated ring);



(wherein: R^7 and R^8, equal to or different from each other, represent: H, halogen, CH_3; and wherein R^9=phenyl, vinyl, phenoxy):



(wherein: R^9=phenyl, vinyl, phenoxy).

3. A method for fighting infestations by insects and acari, comprising distributing in the zone to be protected an effective amount of one or more of the compound of claim 1.

4,328,238
BENZOTHIAZOCINE AND BENZOTHIAZONINE DERIVATIVES AND USE

Yasunobu Sato; Kuniyuki Tomita, and Shinsaku Kobayashi, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

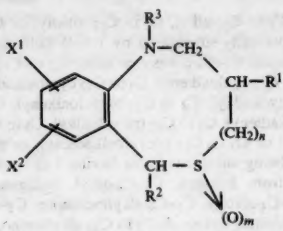
Continuation of Ser. No. 44,377, Jun. 1, 1979, abandoned. This application Sep. 4, 1980, Ser. No. 184,096

Claims priority, application Japan, Jun. 5, 1978, 53-67368; Jun. 5, 1978, 53-67369

Int. Cl.³ A61K *31/395, 31/55*; **C07D** *281/10, 281/18*

U.S. Cl. 424—275 **28 Claims**

1. Compounds of formula (I):



(I)

wherein:

R^1 and R^2 are the same or different and each represents a hydrogen atom or a methyl group;

R^3 is a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

X^1 is a hydrogen atom, a methyl group, a methoxy group, a methanesulfonyl group, a halogen atom, a trifluoromethyl group, a nitro group or a cyano group at the 7-, 8-, or 9-position;

X^2 is a hydrogen atom;

n is 1 or 2; and

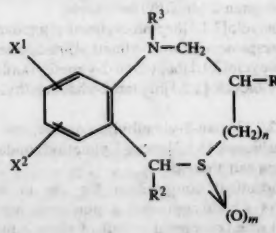
m is 0 or 1;

and pharmaceutically acceptable acid addition salts thereof; excluding those compounds in which:

R^1, R^2, R^3, X^1 and X^2 all represent hydrogen atoms, n is 1 and m is 0; and

R^1, R^2 and X^2 all represent hydrogen atoms, R^3 represents a hydrogen atom or a methyl group, X^1 represents a chlorine atom at the 9-position, n is 1 and m is 0.

25. A pharmaceutical composition comprising a pharmaceutically acceptable carrier or a diluent and, as active ingredient, a compound of formula (I):



(I)

wherein:

R^1 and R^2 are the same or different and each represents a hydrogen atom or a methyl group;
R^3 is a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;
X^1 is a hydrogen atom, a methyl group, a methoxy group, a methanesulfonyl group, a halogen atom, a trifluoromethyl group, a nitro group or a cyano group at the 7-, 8- or 9-position;
X^2 is a hydrogen atom;
n is 1 or 2; and
m is 0 or 1;
or a pharmaceutically acceptable acid addition salt thereof;
excluding those compounds in which:
R^1, R^2, R^3, X^1 and X^2 all represent hydrogen atoms, n is 1 and m is 0; and
R^1, R^2 and X^2 all represent atoms, R^3 represents a hydrogen atom or a methyl group, X^1 represents a chlorine atom at the 9-position, n is 1 and m is 0.

4,328,239
8-AMINOALKYLPSORALENS

Kurt D. Kaufman, Kalamazoo, Mich., assignor to Elder Pharmaceuticals, Inc., Hamilton, Ind.

Continuation-in-part of Ser. No. 73,907, Sep. 10, 1979, Pat. No. 4,269,851. This application Feb. 23, 1981, Ser. No. 236,765
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ C07D *493/04;* A61K *31/365*
U.S. Cl. 424—279 **6 Claims**

1. 8-primaryaminoloweralkylpsoralen.

3. The method of effecting photochemical sensitivity on the skin of a mammal comprising the step of orally administering to the said mammal an effective photosensitizing dose of a compound of claim 1.

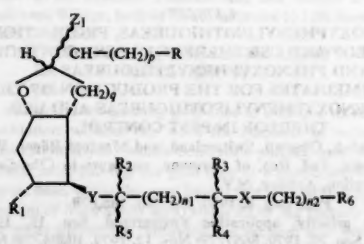
4. The method of claim 3 wherein the compound is 8-aminomethylpsoralen.

4,328,240
CERTAIN PGI$_1$ COMPOUNDS AND THEIR PHARMACEUTICAL COMPOSITION AND METHODS

Carmelo Gandolfi, Milan; Carlo Passarotti, Gallarate; Alessandro Andreoni, Cologno Monzese; Angelo Fumagalli, Monza; Franco Faustini, Milan; Roberto Ceserani, Milan, and Maria M. Usardi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Division of Ser. No. 859,703, Dec. 12, 1977, abandoned. This application Jul. 28, 1978, Ser. No. 928,809
Claims priority, application Italy, Dec. 31, 1976, 31041 A/76; Jan. 4, 1977, 19283 A/77; Mar. 14, 1977, 21171 A/77; Mar. 21, 1977, 21412 A/77; Mar. 31, 1977, 21863 A/77
Int. Cl.³ A61K *31/34;* C07D *307/935;* A61K *31/557*
U.S. Cl. 424—285 **63 Claims**

1. A compound of formula (I)



(I)

wherein
R is carboxy or a C_1–C_{12} carbalkoxy group;
Z_1 is hydrogen;
p is zero or an integer of 1 to 7 provided that when p is 0, 1, 2 or 4–7, then Y is only —C≡C—;
q is 1;
R_1 is hydrogen, hydroxy;
Y is —C≡C—; —CH=CH—(cis); —CH_2—CH_2—;
one of R_2 and R_5 is hydrogen or C_1–C_6 alkyl, and the other is hydroxy;
each of R_3 and R_4, which are the same or different, may be hydrogen, C_1–C_6 alkyl or fluorine;
each of n_1 and n_2, which are the same or different, is zero or an integer of 1 to 6;
X is —$(CH_2)_m$—, wherein m is zero or 1;
R_6 is:
(a) hydrogen; or
(b) C_1–C_4 alkyl;
and the pharmaceutically or veterinarily acceptable salts thereof.

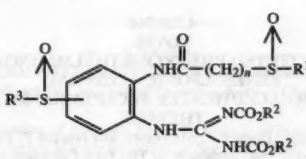
48. Method of inhibiting blood platelet aggregation or preventing and inhibiting thrombosis formation or of decreasing the adhesiveness of blood platelets, said method comprising contacting blood platelets with an effective amount of a compound of any one of claims 8, 1 or 2.

4,328,241
SUBSTITUTED PHENYLGUANIDINES AND METHOD

Rudiger D. Haugwitz, and Barbara V. Maurer, both of Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 20, 1981, Ser. No. 284,741
Int. Cl.³ C07C *147/14;* A61K *31/325*
U.S. Cl. 424—300 **9 Claims**

1. A compound of the structure



wherein R^1 is lower alkyl, cycloalkylalkyl, or phenylalkyl; R^2 is lower alkyl, phenyl or benzyl; and R^3 is lower alkyl, cycloalkylalkyl, lower alkenylalkyl, dihalovinylalkyl, dihalobutadienyl or phenylalkyl, and n is 1 to 5, and physiologically acceptable salts thereof.

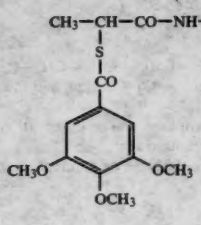
6. An anthelmintic composition comprising a therapeutic amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,328,242
α-(3,4,5-TRIMETHOXYHENZOYL)THIOPROPIONYLGLYCINE

Leonardo De Vincentiis, Rome, Italy, assignor to Ausoria Farmaceutici S.r.l., Pomezia, Italy

Filed Jan. 5, 1981, Ser. No. 222,748
Claims priority, application Italy, Nov. 11, 1980, 25883 A/80
Int. Cl.³ A61K *31/265;* C07C *153/023*
U.S. Cl. 424—301 **4 Claims**

1. α-(3,4,5-Trimethoxybenzoyl)thiopropionylglycine of formula (I)



(I)

4,328,243

MANIC-DEPRESSIVE ILLNESSES

David F. Horrobin, P.O. Box 10, Nuns' Island, Montreal, Canada (H3E 1J8), and Julian Lieb, 41 Village La., Bethany, Conn. 06525

Filed Apr. 7, 1981, Ser. No. 251,901
Int. Cl.[3] A61U *31/20, 31/265*
U.S. Cl. 424—301 3 Claims

1. Method for the treatment of the side-effects of lithium treatment in a subject suffering from manic-depressive psychosis and undergoing lithium treatment, which method comprises orally administering to said subject an effective amount of dihomogamma-linolenic acid and/or gamma-linolenic acid or linoleic acid.

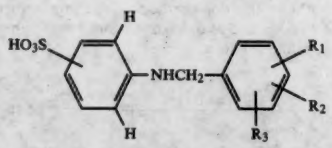
4,328,244

NOVEL (((SUBSTITUTED-PHENYL)METHYL)AMINO)BENZENESULFONIC ACIDS AND PHARMACEUTICALLY-ACCEPTABLE SALTS THEREOF

John K. Daniel; Donald P. Matthews, and Norton P. Peet, all of Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

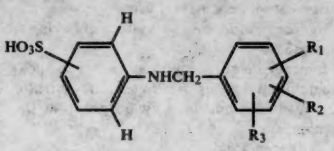
Filed May 21, 1980, Ser. No. 152,076
Int. Cl.[3] A61K *31/275, 31/185;* C07C *143/58, 121/50*
U.S. Cl. 424—304 18 Claims

1. A compound of the formula:



or a pharmaceutically-acceptable salt thereof wherein R_1 represents lower alkyl, lower alkoxy, amino, cyano, trifluoromethyl, acetyl, methylthio, methylsulfinyl, methylsulfonyl, benzoyl, substituted benzoyl or aminosulfonyl; and R_2 and R_3 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, amino, cyano, trifluoromethyl, acetyl, methylthio, methylsulfinyl, methylsulfonyl, benzoyl, substituted benzoyl or aminosulfonyl.

16. A method for inhibiting viruses which comprises contacting viruses or virus host cells with an effective virus inhibiting amount of a compound represented by the formula:



or a pharmaceutically-acceptable salt thereof wherein R_1 represents lower alkyl, lower alkoxy, nitro, amino, cyano, trifluoromethyl, acetyl, methylthio, methylsulfinyl, methylsulfonyl, benzoyl, substituted benzoyl, aminosulfonyl or halogen; and R_2 and R_3 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, amino, cyano, trifluoromethyl, acetyl, methylthio, methylsulfinyl, methylsulfonyl, benzoyl, substituted benzoyl, aminosulfonyl or halogen.

4,328,245

CARBONATE DIESTER SOLUTIONS OF PGE-TYPE COMPOUNDS

Cheng-Der Yu, Mountain View, and Ursula Bruenner, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 13, 1981, Ser. No. 234,240
Int. Cl.[3] A61K *31/215, 31/19*
U.S. Cl. 424—305 10 Claims

1. A stable pharmaceutical composition comprising a PGE or PGE-type compound dissolved in a cyclic carbonate diester solvent which may contain water in an amount up to the solubility limit of water for the diester solvent encapsulated in a soft shelled gelatin capsule.

4,328,246

ANTI WALKER 256 CARCINOMA AGENT AND COMBINATION THEREOF

Joseph Gold, 127 Edgemont Dr., Syracuse, N.Y. 13214

Division of Ser. No. 66,442, Aug. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 582,666, Jun. 2, 1975, abandoned. This application Aug. 20, 1980, Ser. No. 179,890
Int. Cl.[3] A61K *31/235, 33/02*
U.S. Cl. 424—308 3 Claims

1. A method of treating malignant Walker 256 carcinoma tumors which comprises internally administering to a mammal so afflicted ethyl 2-(parachlorophenoxy)-2-methyl propionate in a dosage sufficient to inhibit the growth of said tumors.

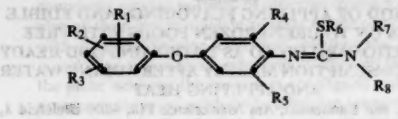
4,328,247

PHENOXYPHENYLISOTHIOUREAS, PRODUCTION THEREOF AND USE THEREOF IN PEST CONTROL, AND PHENOXYPHENYLTHIOUREAS AS INTERMEDIATES FOR THE PRODUCTION OF THE PHENOXYPHENYLISOTHIOUREAS AND USE THEREOF IN PEST CONTROL

Jozef Drabek, Oberwil, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 8, 1980, Ser. No. 185,078
Claims priority, application Switzerland, Sep. 19, 1979, 8474/79; Sep. 21, 1979, 8657/79; Nov. 12, 1979, 10084/79; Nov. 12, 1979, 10085/79; Jul. 18, 1980, 5541/80
Int. Cl.[3] A01N *37/52, 47/28;* C07C *157/14*
U.S. Cl. 424—326 9 Claims

1. A compound of the formula



wherein each of R_1, R_2 and R_3 is hydrogen, halogen, C_1–C_4alkyl, C_1–C_4alkoxy, trifluoromethyl or nitro, each of R_4 and R_5 is C_2–C_4alkyl, R_6 is C_1–C_6alkyl, C_3–C_6alkenyl or C_3–C_5alkynyl, R_7 is C_1–C_{10}alkyl, C_3–C_5alkenyl or C_3–C_6cycloalkyl, and R_8 is hydrogen or C_1–C_{10}alkyl.

8. An insecticidal or acaracidal composition which contains, as active component, an insecticidally or acaracidally effective amount of a compound according to claim **1** and a carrier.

4,328,248

ISOTHIOUREA DERIVATIVES HAVING PESTICIDAL ACTIVITY

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Jozef Drabek, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

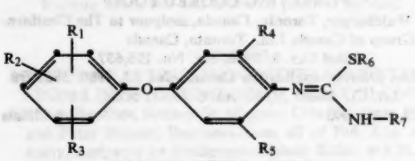
Division of Ser. No. 164,375, Jun. 30, 1980, abandoned. This application Apr. 7, 1981, Ser. No. 251,821

Claims priority, application Switzerland, Jul. 3, 1979, 6197/79; Jun. 11, 1980, 4490/80

Int. Cl.[3] **C07C** *157/14;* **A01N** *9/12*

U.S. Cl. 424—326 **15 Claims**

1. A compound of the formula I



(I)

wherein R_1, R_2 and R_3 independently of one another are each hydrogen, C_1–C_4-alkyl, methoxy, halogen, trifluoromethyl or nitro, R_4 is hydrogen or methyl, R_5 is C_1–C_3-alkyl, R_6 is C_1–C_6-alkyl, C_2–C_6-alkenyl, C_3–C_5-alkynyl, C_3–C_6-cycloalkyl, C_2–C_4-(alkoxyalkyl) or C_2–C_4-(alkylthioalkyl), and R_7 is C_1–C_{12}-alkyl, C_3–C_5-alkenyl or C_3–C_8-cycloalkyl, and acid addition salts thereof.

14. A method for combatting insects and acarides which comprises applying thereto an insecticidally or acaricidally effective amount of a compound according to claim **1**.

4,328,249

METHOD FOR TREATING GUM BASE TO IMPROVE SHELF-LIFE WITHOUT NEED FOR ANTIOXIDANTS

Donald A. M. Mackay, Pleasantville, and Wayne J. Puglia, Bellerose Village, both of N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Jan. 30, 1981, Ser. No. 229,803

Int. Cl.[3] **A23G** *3/30*

U.S. Cl. 426—3 **12 Claims**

1. A method for treating gum base to improve its resistance to oxidation without the need for amounts of antioxidants normally employed, which comprises placing gum base in a confined area, heating the gum base at a temperature to melt the gum base, while the gum base is in a molten state applying a vacuum of from about 20 to about 29 in. Hg thereto to withdraw gases therefrom, removing the vacuum and introducing an inert gas under a pressure of 1 to about 5 psi into contact with the gum base and reapplying the vacuum thereby causing the inert gas to help sweep out air or oxygen remaining absorbed in the gum base after the first vacuum application.

4,328,250

ACTIVE DRIED BAKERS' YEAST

Philippe Clement, Roubaix, and Jean-Paul Rossi, Marcq en Baroeul, both of France, assignors to Societe Industrielle Lesaffre, Paris, France

Continuation of Ser. No. 702,019, Jul. 2, 1976, abandoned. This application Aug. 2, 1978, Ser. No. 930,163

Claims priority, application France, Jul. 3, 1975, 75 20943

Int. Cl.[3] **A21D** *2/00;* **C12C** *11/16, 11/18;* **C12N** *1/18*

U.S. Cl. 426—18 **23 Claims**

1. A yeast composition in solid particulate form, consisting essentially of an active dry baker's yeast and an emulsifying agent having an HLB value of between 3 and 11 in water and in an amount sufficient to protect said yeast against deterioration during drying, said composition having a dry matter content of at least 92%, and having the capability of fermenting sweetened doughs containing more than 5% sugar, and wherein said composition

(a) releases an amount of gas between 45 ml and 54 ml in test A'_3

wherein in said test A'_3 160 mg of dry matter of said dry yeast is rehydrated with 6 ml of distilled water at 38° C. and at the end of 15 minutes of rehydration adding the amount of water, together with 405 mg of NaCl, required to bring the total to 15 ml, to the product resulting from the fifteen minutes rehydration and then adding the resulting yeast/salt/water composition to 20 g of flour, and 2 g of saccharose at 30° C., thereafter kneading the resulting mixture for 40 seconds to obtain a dough, maintaining said dough at 30° C. in a vessel for 13 minutes after the beginning of said kneading, thereafter hermetically sealing said vessel and measuring the total amount of gas produced, in ml, at 30° C. and 760 mm of Hg, after the expiration of 60 minutes; and also

(b) releases an amount of gas between 23 and 37 ml in test A'_4

wherein in said test A'_4 the procedure of said test A'_3 is followed except that there is added to said flour 5.5 g of saccharose, and the total amount of gas produced is measured after 60 minutes.

4,328,251

MUSHROOM WITH EDIBLE COLLOIDAL SUBSTANCE

Maurice Blanchaud, and Edgar Bournier, both of Chace, France (49580)

Continuation of Ser. No. 931,673, Aug. 7, 1978, Pat. No. 4,218,484, which is a continuation of Ser. No. 750,451, Dec. 14, 1976, Pat. No. 4,143,167, which is a continuation-in-part of Ser. No. 608,272, Aug. 27, 1975, abandoned, which is a continuation of Ser. No. 394,275, Sep. 4, 1973, abandoned. This application Aug. 19, 1980, Ser. No. 179,669

Claims priority, application France, Sep. 4, 1972, 72 31308

The portion of the term of this patent subsequent to Aug. 19, 1997, has been disclaimed.

Int. Cl.[3] **A23B** *1/00*

U.S. Cl. 426—262 **4 Claims**

1. A mushroom product made by the process comprising

placing a mushroom having natural juices and interstices filled with air or other gas within a container and subjecting the mushroom to a vacuum sufficient to remove at least a part of the air or other gas from the interstices;

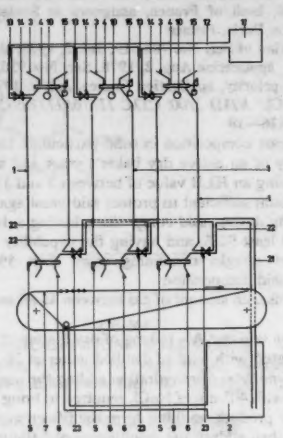
relieving the vacuum and introducing a treatment liquid containing an edible colloidal substance selected from the group consisting of egg white, casein, and carrageenin into the container and contacting the interstices of said mushroom with the treatment liquid,

thereby filling the interstices of the mushroom with an effective amount of the treatment liquid to retain the natural juices, the said filled treatment liquid containing some of the edible colloidal substance;

removing excess treatment liquid from the container; and

coagulating an effective amount of the edible colloidal substance contained in the treatment liquid that is filled

within the interstices to obstruct the filled interstices of the mushroom with the coagulated colloidal substance,



whereby natural aromas, color and appearance of the mushroom is retained.

4,328,252

PRODUCTION OF PROTEIN FIBRES

E. Donald Murray, Winnipeg; Larry D. Barker, Cobourg, and Brenda J. Woodman, Port Colborne, all of Canada, assignors to General Foods Inc., Toronto, Canada

Continuation-in-part of Ser. No. 9,576, Feb. 5, 1979, abandoned. This application Sep. 9, 1980, Ser. No. 185,588

Int. Cl.³ A23J *1/00, 3/00*

U.S. Cl. 426—262 **7 Claims**

1. A method for the production of protein fibres, which comprises:

(a) subjecting a protein source material to an aqueous food grade salt solution, having a salt concentration of 0.2 to 0.8 ionic strength and a pH of about 5.5 to about 6.5, at a temperature of about 15° to 35° C. to solubilize protein in said source material and obtain a salt solubilized protein solution,

(b) adding the salt-solubilized protein solution to water to dilute the same to an ionic strength of less than 0.1 to form an aqueous dispersion of protein micelles,

(c) settling the protein micelles from said aqueous dispersion to form an amorphous, viscous, sticky, gluten-like protein micellar mass having a moisture content of about 60 to about 75% by weight,

(d) separating the protein miscellar mass from the remaining aqueous phase,

(e) injecting said separated protein miscellar mass into a hot, substantially neutral, coagulating medium, having a temperature of at least about 90° C., through a plurality of openings to form protein fibres by coagulation, and

(f) removing the protein fibres from said hot, substantially neutral, coagulating medium.

4,328,253

METHOD OF APPLYING FLAVORINGS AND EDIBLE FATS ON TO DEEP-FROZEN FOODS WITH FREE APPORTIONABILITY SO AS TO OBTAIN FOOD READY FOR CONSUMPTION MERELY AFTER ADDING WATER AND APPLYING HEAT

Elard S. von Kamienski, Am Menkebach 11a, 4800 Bielefeld 1, and Heiner Löffler, Am Heidewald 18, 4830 Gutersloh, both of Fed. Rep. of Germany

Filed Mar. 27, 1980, Ser. No. 134,564

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2926992

Int. Cl.³ A23L *1/40*

U.S. Cl. 426—307 **3 Claims**

1. A method of preparing freely apportionable deep-frozen foods comprising the steps of:

(a) grinding the deep frozen food ingredients thereof and pretreating said ingredients with a vibrating screen or sieve to remove substantially all of the frost therefrom;

(b) placing the pretreated deep-frozen ingredients of step (a) into a mixing cylinder;

(c) spraying a portion of edible fats onto the pretreated ingredients during movement thereof within said mixing cylinder to produce a premix wherein a thin film of fat is partially formed on the respective food ingredients;

(d) preparing a separate dry mixture of flavorings, aromatic substances, and swelling substances;

(e) admixing said separate dry mixture with said premix.

4,328,254

PURVEYING COOKED FOOD

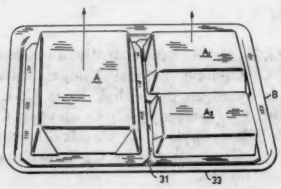
Peter Waldburger, Toronto, Canada, assignor to The Continental Group of Canada Ltd., Toronto, Canada

Filed Oct. 9, 1980, Ser. No. 195,657

Claims priority, application Canada, Jul. 23, 1980, 3567999

Int. Cl.³ B65D *21/02;* **A47G** *19/00;* **A23L** *1/00*

U.S. Cl. 426—393 **9 Claims**



1. A method of purveying cooked food, comprising,

selecting a plurality of disposable ovenable containers of assorted sizes and made of light weight ovenable material each having a receptacle part including a floor and a surrounding upstanding wall defining a mouth surrounded by an outstanding lip,

filling a number of containers with individual portions of partially cooked food of a number of different kinds, affixing removable covers to the containers, and subjecting the filled containers to freezing,

selecting several of said containers containing respective serving portions of different frozen foods to provide a serving and of a complementary size and shape so that when several containers are inverted on a surface and the lips of adjoining containers overlapped, an array of the inserted containers is formed having a margin defined by the edges of the container lips,

selecting an array-matching ovenable plate having an undivided flat base surface merging into an upstanding retaining rim defining a receiving area of a size to be substantially completely occupied by the array of containers with the container lips forming the peripheral margin of the array substantially abutting the rim,

forming a number of serving assemblies in which each is

formed by removing the covers from several containers containing serving portions of different frozen foods and placing them upside down in an array on the plate surface, with lips of adjoining containers overlapping and the outside lips of containers substantially abutting the rim of the plate, whereby the containers are aligned and held in position in the array solely by overlapping contact of their lips with the walls of adjoining containers and with the rim of the plate and seating contact is effected between the rims of the containers and the plate surface and wall or the rims of other containers to limit the seepage and burning of food after heating,

heating the serving assembly to bring the food, at least, to eating temperature,

removing the containers to leave the respective foods exposed in several separate portions ready for eating.

7. An ovenable food serving unit, comprising,

a plate of ovenable material having an undivided flat base surface surrounded by an upstanding rim,

an array of several inverted containers each having a floor and an upstanding wall defining a mouth surrounded by an outstanding lip each providing an open-bottom closed-top enclosure each containing a serving portion of a different cooked and frozen food ready for heating,

the containers being of a size relative to the plate and so arranged that their lips overlap lips of adjoining containers and form a peripheral margin seated on the plate surface and substantially abutting the rim of the plate and the lips contact the base to limit escape of food from the containers between the plate surface and lips to reduce burning when the unit is heated prior to serving.

4,328,255

METHOD OF EXTRACTING COFFEE OIL CONTAINING AROMA CONSTITUENTS FROM ROASTED COFFEE

Wilhelm Roselius, Bremen St. Magnus; Otto Vitzthum, Bremen, and Peter Hubert, Bremen-Lesum, all of Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim, Fed. Rep. of Germany

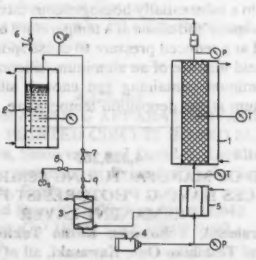
Continuation of Ser. No. 222,625, Feb. 1, 1972, abandoned, and a continuation of Ser. No. 499,944, Aug. 23, 1974, abandoned, and a continuation of Ser. No. 641,214, Dec. 16, 1975, abandoned. This application Jun. 8, 1977, Ser. No. 804,830

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1971, 2106133

The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.

Int. Cl.³ A23F *5/48*

U.S. Cl. 426—417 **3 Claims**



1. In the method of extracting coffee oil, containing aromatic constituents, using carbon dioxide, the improvement for selectively extracting the oil in high yield and in stable form, which comprises extracting solid, roasted coffee with dry carbon dioxide under supercritical conditions of pressure of at least 80 atmospheres gauge and supercritical conditions of temperature of above 31.3° C.

4,328,256

PRESERVATION OF GREEN PLANT TISSUES

Cesar Romero-Sierra, Bath, and John C. Webb, Kingston, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Continuation-in-part of Ser. No. 61,688, Jul. 30, 1979, Pat. No. 4,278,715. This application Jun. 9, 1981, Ser. No. 271,862

Int. Cl.³ A01N *3/00*; C09K *15/06*

U.S. Cl. 427—4 **8 Claims**

1. A solution, for the preservation of naturally green coloured plant tissues, consisting essentially of: 35–45% by volume water, 20–30% 2-propanol, 5–12% propionic acid, 5–10% sulphurous acid, 5–10% formalin, 2.5–5% formic acid, 1–5% ethylene glycol, a selected amount of (a) at least one cupric salt selected from the group consisting of cupric sulphate, cupric chloride, cupric carbonate, cupric acetate and cupric nitrate, (b) citric acid, (c) sodium phosphate, (d) sodium sulphite, (e) DBE, (f) 20-20-20 fertilizer, (g) magnesium sulphate, (h) glycerol, (i) butylated hydroxytoluene.

4,328,257

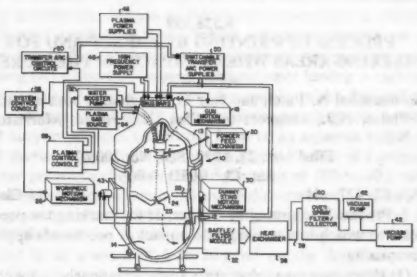
SYSTEM AND METHOD FOR PLASMA COATING

Erich Muehlberger, San Clemente, and Roland D. Kremith, Newport Beach, both of Calif., assignors to Electro-Plasma, Inc., Irvine, Calif.

Filed Nov. 26, 1979, Ser. No. 97,723

Int. Cl.³ B05D *1/08*

U.S. Cl. 427—34 **40 Claims**



1. A transfer arc plasma system comprising:

a plasma gun positioned in operative relation to a workpiece and providing a supersonic plasma stream of substantially inert gas;

enclosure means providing a low static pressure environment about the plasma gun and workpiece;

means coupled to the workpiece for selectively establishing both a cathodic and an anodic relationship of the workpiece relative to the plasma gun and including means for selectively switching between the cathodic and anodic relationships; and

means for injecting spray powder into the plasma stream for deposition on the workpiece.

4,328,258

METHOD OF FORMING SEMICONDUCTING MATERIALS AND BARRIERS

John H. Coleman, Locust Valley, N.Y., assignor to Plasma Physics Corp., Locust Valley, N.Y.

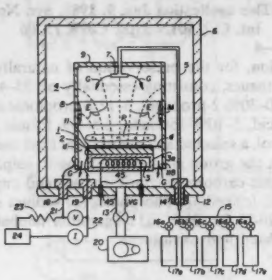
Division of Ser. No. 857,690, Dec. 5, 1977, Pat. No. 4,226,897. This application Oct. 24, 1979, Ser. No. 88,100

Int. Cl.³ C23C *11/00*

U.S. Cl. 427—39 **23 Claims**

1. Apparatus for producing a film on the surface of a substrate comprising: an evacuable enclosure, means for evacuating said enclosure, an external source of gaseous film-forming material, means for introducing into the evacuated enclo-

sure said gaseous film-forming material at subatmospheric pressure in the region of said substrate, means for applying to the surface of said substrate a spatially non-uniform



electric field having a weak field region extending over a portion of said substrate, and means for controlling said pressure to maintain a glow discharge in said weak field region adjacent said portion of said substrate to produce a substantially uniform film on said portion of said substrate.

4,328,259

PROCESS OF PRINTING BY IMPACT AND FOR MARKING AREAS WHERE IMPACT OR PRESSURE IS APPLIED

Gordhanbhai N. Patel, and Ray H. Baughman, both of Morris Plains, N.J., assignors to Allied Corporation, Morristown, N.J.

Filed Oct. 27, 1980, Ser. No. 200,674
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—44 **11 Claims**

1. Process for printing by impact, or for marking the precise areas to which low to moderate impact or pressure is applied, comprising:

(1) Producing on a substrate, a surface responsive—by color change—to low to moderate impact or pressure, by the sequence of steps consisting essentially of:

(a) depositing on the substrate—in a crystalline form which becomes colored and partially polymerized upon heating below the melting point for a period of time or exposing to high energy radiation—a crystalline solid consisting essentially of at least one monomeric acetylene compound having at least two triple bonds in the molecule, of which bonds at least two are conjugated, said acetylene compound being doubly terminally substituted by a chain consisting of from one to four methylene diradicals terminated by a radical selected from para-bromophenyl urethane, n-butoxycarbonylmethylene urethane, phenyl urethane, metatolyl urethane, and hydroxy; and

(b) partially polymerizing said monomeric acetylene compound by said heating or exposing to high energy radiation to form a composition consisting essentially of 0.1 to 50 weight percent of polymer, the balance of said composition being predominantly the parent acetylene monomer or monomers; said composition irreversibly changing color when subjected to low to moderate impact or pressure, at the precise areas where such impact or pressure is applied; and

(2) Applying a force, by impact or pressure to areas of the resulting surface, said force not less than that sufficient to produce a color change in said areas, and said force not greater than that which can be developed, by hand, through the tip of a sharp pointed rod.

4,328,260

METHOD FOR APPLYING ANTIREFLECTIVE COATING ON SOLAR CELL

Daniel L. Whitehouse, Clarksburg, Md., assignor to Solarex Corporation, Rockville, Md.

Filed Jan. 23, 1981, Ser. No. 227,929
Int. Cl.³ B05D *1/36, 5/06*
U.S. Cl. 427—75 **7 Claims**

1. A method of applying an antireflective coating and grid to the surface of a solar energy cell, said surface being adapted to absorb light impinging thereon, comprising

(a) placing a screen on said surface of the solar energy cell, said screen having a design in which the area to be coated is open;

(b) applying a metal alkoxide paste to said screen;

(c) heating said coated cell to a temperature in the range of about 300° C. to about 550° C. to decompose the alkoxide and form the metal oxide; and

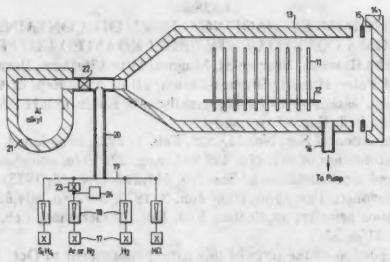
(d) plating the clear areas of said cell surface with a nickel compound to form a metallic grid.

4,328,261

METALLIZING SEMICONDUCTOR DEVICES

Rudolf A. H. Heinecke, Harlow, and Ronald C. Stern, Cheshunt, both of England, assignors to ITT Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 91,285, Nov. 5, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,799
Claims priority, application United Kingdom, Nov. 9, 1978, 43914/78; Nov. 8, 1979, 38793/79
Int. Cl.³ H01L *21/285*
U.S. Cl. 427—91 **14 Claims**



1. A process for metallizing a semiconductor device with an aluminum/silicon alloy film, the process including exposing the device to a substantially homogeneous mixture of an aluminum alkyl vapour and silane at a temperature between 250° and 500° C. and at a reduced pressure to cause spontaneous deposition from said mixture of an aluminum/silicon alloy film comprising aluminum containing just enough silicon to saturate said aluminum at the deposition temperature.

4,328,262

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES HAVING PHOTORESIST FILM AS A PERMANENT LAYER

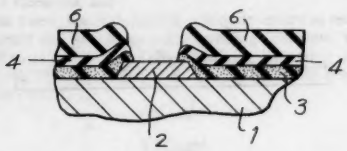
Toshio Kurahashi, Yokohama; Kazuo Tokitomo, Aizuwakamatsu, and Toshihiko Ono, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 28, 1980, Ser. No. 172,822
Claims priority, application Japan, Jul. 31, 1979, 54-97656
Int. Cl.³ H01L *21/312, 21/316*
U.S. Cl. 427—93 **12 Claims**

1. A method of manufacturing a semiconductor device having a semiconductor substrate, said method comprising the steps of

forming an insulator layer of a material from a group consist-

ing of phospho-silicate glass and silicon oxide on the substrate;
covering a surface of the insulator layer with a photoresist film;
carrying out a first heat treatment of said substrate to harden the photoresist film;



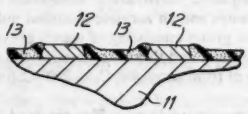
covering an upper surface of the hardened photoresist film with a thermosetting resin film; and
carrying out a second heat treatment at a temperature higher than 300° C. to cure the thermosetting resin film.

4,328,263

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES USING LIFT-OFF TECHNIQUE

Toshio Kurahashi, Yokohama; Kazuo Tokitomo, Aizuwakamatsu, and Tadashi Kiriseko, Kanagawa, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 28, 1980, Ser. No. 172,823
Int. Cl.³ H01L *21/316*
U.S. Cl. 427—93 **4 Claims**



1. A method of manufacturing a semiconductor device having a semiconductor substrate and a conductor layer formed on said substrate, said method comprising the steps of
forming a film of photoresist on the conductor layer of said semiconductor device and using said film as an etching mask for patterning said conductor layer;
applying liquid glass to said substrate to cover the upper surface of said photoresist film;
baking said substrate at a sufficiently high temperature to harden the liquid glass and deform and shrink said photoresist film to expose the sides of said film;
removing said photoresist film; and
simultaneously removing by lift off the hardened liquid glass on said photoresist film.

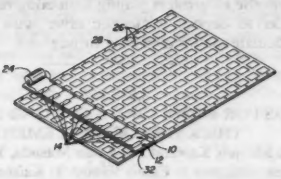
4,328,264

METHOD FOR MAKING APPARATUS FOR TESTING TRACES ON A PRINTED CIRCUIT BOARD SUBSTRATE

William E. Johns, Sunnyvale, and David E. Locklin, Danville, both of Calif., assignors to Printed Circuits International, Inc., Sunnyvale, Calif.

Filed Dec. 10, 1979, Ser. No. 102,042
Int. Cl.³ H05K *3/42*; H01R *9/09*
U.S. Cl. 427—97 **8 Claims**

1. A method for constructing a probe for a continuity test means for testing traces on a first planar printed circuit board substrate, said method comprising the steps of:
providing a mirror image of a pattern of said traces to be tested to define selected regions of probe contact on a second substrate;
registering said image as conductive plating on an obverse face of said second substrate; and
interconnecting said conductive plating in a preselected pattern on a reverse face of said second substrate for coupling to said continuity testing means such that a continuity indication is provided upon aligned contact between said traces to be tested and said conductive plating.



4,328,265

PROCESS FOR PREPARATION OF A TRANSFER SHEET FOR ELECTROSTATIC PHOTOGRAPHY OR PRINTING

Mamoru Kato; Susumu Yamaura, both of Hirakata; Yasutoki Kamezawa, Tanabe, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 831,862, Sep. 9, 1977, Pat. No. 4,168,338.
This application May 16, 1979, Ser. No. 39,683
Claims priority, application Japan, Sep. 24, 1976, 51-113595
Int. Cl.³ B32B *27/38*
U.S. Cl. 427—146 **13 Claims**

1. A process for preparing a transfer sheet for electrostatically transferring thereon an electrically conductive or electrically semi-conductive toner, which comprises coating on at least one surface of a substrate an aqueous composition containing (A) a thermoplastic acrylic polymer having a carboxylic group content of 2 to 30% by weight in the form of an aqueous emulsion and (B) a thermosetting resin reactive with said acrylic polymer (A) in the form of an aqueous solution, said thermosetting resin (B) being a glycidyl ether of a polyalkylene polyol having an epoxy equivalent of 100 to 400, said thermoplastic acrylic resin (A) and said thermosetting resin (B) being present at an (A)/(B) weight ratio ranging from 100/5 to 100/100 based on solids, said aqueous composition being coated in an amount of 2 to 20 g/m^2 on the dry basis, and drying the coated substrate to form a toner-receiving layer on the surface of the substrate.

4,328,266

METHOD FOR RENDERING NON-PLATABLE SUBSTRATES PLATABLE

Nathan Feldstein, Princeton, N.J., assignor to Surface Technology, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 106,499, Dec. 26, 1979, which is a division of Ser. No. 803,777, Jun. 6, 1977, Pat. No. 4,181,760.
This application Mar. 10, 1980, Ser. No. 128,579
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.
Int. Cl.³ C23C *3/02*; B05D *3/10*
U.S. Cl. 427—305 **10 Claims**

1. A process for metallizing a non-catalytic metal or alloy non-catalytic to a composite electroless plating bath comprising the steps of:
(a) contacting said non-catalytic metal or alloy with a promoter composition wherein said promoter composition comprises a suitable reducing agent and metal ions, wherein said reducing agent is capable of chemically reacting with said non-catalytic metal or alloy and the metal ions within the promoter composition and wherein said metal ions are selected from the group consisting of nickel, cobalt, and iron and mixtures thereof, and wherein the relative molar concentration of the reducing agent to the metal ion is so adjusted as to permit the initial chemical interaction of the reducing agent with the non-catalytic

metal or alloy and then the heterogeneous reduction of the metal ions present in the promoter composition and then

(b) contacting the treated non-catalytic metal or alloy with a composite electroless plating bath comprising particulate matter to deposit a metallic layer with finely divided particulate matter dispersed throughout.

4,328,267

PROCESS FOR PRODUCING A COATING OF UNIFORM THICKNESS OF AN ELEMENT

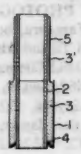
Takehiko Matsuo, Kawasaki, and Ken Masuda, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 892,923, Apr. 3, 1978, abandoned, which is a continuation of Ser. No. 678,034, Apr. 19, 1976, abandoned. This application Nov. 2, 1979, Ser. No. 90,653

Claims priority, application Japan, Apr. 25, 1975, 50/50287

Int. Cl.³ B05D *1/40, 3/12, 1/18*

U.S. Cl. 427—345 **11 Claims**



2. A process for applying a thin uniform coating to a member to be coated, which comprises: positioning a member to be coated in a hollow portion of an external member, fixing an internal member to the member to be coated at a portion thereof where a coating material is not to be applied and which is the rear portion thereof when the member to be coated is moved from the external member, removing the member to be coated from the hollow portion of said external member by relatively moving these members while a coating material is present in a gap between at least the member to be coated and the external member, the coating material being circulated to and from said gap while the member to be coated is being removed, and as the member to be coated is removed from the coating material the internal member is moved to take the place of the member to be coated as same is withdrawn, and applying leakage preventing means which is fixed in respect of the external member in sliding contact with the surface of the internal member so as to prevent the coating material from leaking along the surface of the internal member, and, as the member to be coated is removed from the coating material, causing the coating material accumulated in the gap between the surface of the member to be coated and the inner surface of the external member to be accumulated in the gap between the outer surface of the internal member and the inner surface of the external member, wherein said gap exists throughout said relative movement.

4,328,268

TRANSFER MATERIAL FOR SEAMLESS COLORATION OF CYLINDRICAL ARTICLE

Yoshiharu Tsuji, and Shigekazu Namura, both of Kyoto, Japan, assignors to Nissha Printing Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 889,384, Mar. 23, 1978, abandoned. This application Jan. 4, 1980, Ser. No. 109,568

Claims priority, application Japan, Apr. 1, 1977, 52/37775

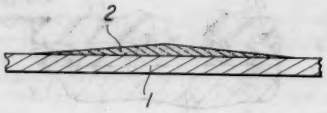
Int. Cl.³ B32B *3/00*

U.S. Cl. 428—40 **8 Claims**

1. In the transfer material for coloring a peripheral surface of an article which includes a releasable base sheet and an adhesively transferable ink layer on said sheet, the improvement wherein

the ink layer is formed by printing an ink containing a resinous binder and at least one dyestuff permeable into a surface of said article by heating,

the length of said ink layer on the base sheet is more than the peripheral length of said article so as to cause both ends of said ink layer to overlap when the surface of said base sheet is wound upon said surface of said article,



the amount of ink per unit area in said ink layer being continuously reduced in both ends of the overlap portion so as to provide a seamless coloration on said surface of said article after said ink layer is transferred thereto.

4,328,269

PRESSURE SENSITIVE ADHESIVE AND TAPE

Ralf Korpman, Bridgewater, N.J., assignor to Permacel, New Brunswick, N.J.

Filed Aug. 25, 1980, Ser. No. 181,288

Int. Cl.³ C09J *7/02*

U.S. Cl. 428—40 **4 Claims**

1. A pressure-sensitive adhesive tape comprising (1) a backing layer and (2) a pressure-sensitive adhesive layer, said adhesive layer obtained by coating the backing layer with a mixture comprising an aliphatic polyhydroxy compound having adjacent hydroxy groups and an acrylate modified polysaccharide selected from the group consisting of starch polyacrylate and cellulose polyacrylate, and thereafter heating the coated sheet to a temperature of from about 90° C. to 200° C. for from about 1 to 60 seconds.

4. A pressure-sensitive adhesive film obtained by coating a mixture comprising an aliphatic polyhydroxy compound and an acrylate modified polysaccharide on a releasable surface and heating for from 90° C. to 200° C. for from about 1 to about 60 seconds wherein said acrylate modified polysaccharide is selected from the group consisting of starch polyacrylate and cellulose polyacrylate.

4,328,270

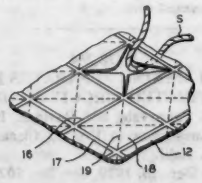
ART OF MAKING LATCH HOOKED ARTICLES

Momchilo Kostovski, 5824 W. Higgins Rd., Chicago, Ill. 60630

Filed May 2, 1980, Ser. No. 146,060

Int. Cl.³ B32B *3/10;* **D05C** *15/00*

U.S. Cl. 428—43 **1 Claim**



1. A latched hooked article comprising,

(1) a foraminous backing web having mutually intersecting filaments defining and surrounding generally rectangular openings in the backing web,

(2) an overlying web secured to the backing web,

(3) the overlying web having mutually intersecting lines of weakness positioned diagonally from the corners of the rectangular openings so as to extend across and in register with central portions of the generally rectangular open-

ings of the backing web, the lines of weakness at their points of intersection forming points of weakness at said central portions which indicate points of, and facilitate, insertion of a latch hook through the overlying web, for hooking strand material on adjacent filaments, and the lines of weakening defining and surrounding areas of identification superposed over and in register with respective filaments, and

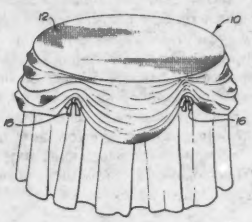
(4) the overlying web having colors or letters in said areas thereof for indicating corresponding filaments, and the colors or letters being diversified for indicating different colors of strand material to be hooked on the respective filaments.

4,328,271

SWAGGED TABLECLOTH

Jean Rountree, 851 N. Michigan Ave., Pasadena, Calif. 91104

Filed Oct. 16, 1978, Ser. No. 951,640
Int. Cl.[3] A47H *13/14*; B32B *3/18*
U.S. Cl. 428—66 5 Claims



1. A swagged tablecloth comprising a pliable circular sheet member having a plurality of non-parallel shirring tape members, said shirring tape members being disposed radially about the circumference of said circular sheet member, said shirring tape members being provided with pull string members for maintaining said tablecloth in a swagged condition, said shirring tape members fully enclosing said pull string members up to the ends of said pull string members.

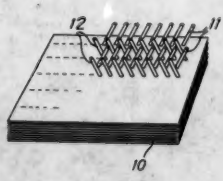
4. A swagged tablecloth comprising a pliable rectangular sheet member having a plurality of non-parallel shirring tape members, one of said shirring tape members being located at each corner of the perimeter of said sheet member, said shirring tape members being provided with pull string members for maintaining said tablecloth in a swagged condition, said shirring tape members fully enclosing said pull string members up to the ends of said pull string members.

4,328,272

REINFORCED LAMINATED STRUCTURE

Michel Maistre, Bordeaux, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Filed Jan. 2, 1980, Ser. No. 109,119
Claims priority, application France, Jan. 9, 1979, 79 00424
Int. Cl.[3] B32B *5/12*
U.S. Cl. 428—105 7 Claims



1. A reinforced laminated structure for composite materials, which structure consists of a stack of superimposed sheets of bi-dimensional reinforcing material and rectilinear reinforcing elements which traverse said stack through and through,

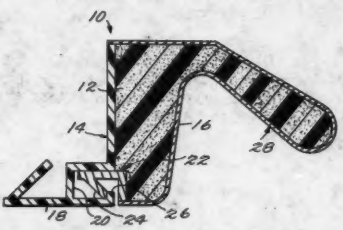
and comprising at least two imbricate groups of rods rigid regularly spacely distributed with the groups arranged in at least two different directions; each reinforcing element being at an angle with the plane that is tangential to the sheets it traverses and at least one of said directions being at an angle with the perpendicular to the traversed sheets, whereby said rods prevent said superimposed sheets from delemination.

4,328,273

SEAL HAVING RESILIENT CORE AND OUTER COVER

Charles Yackiw, Fairport, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,653
Int. Cl.[3] B32B *3/06, 3/08, 5/20*
U.S. Cl. 428—122 19 Claims



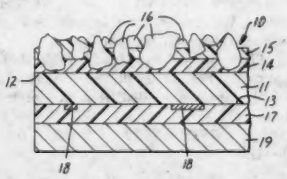
1. A seal comprising a resilient elongated foam core enveloped around its circumference by a cover of polymeric material, said cover having a flexible hollow portion filled with at least part of said core and having a relatively rigid portion protruding from the seal and extending along the length of the seal for attaching the seal to another structure.

4,328,274

TRANSPARENT FRICTION SURFACE SHEET MATERIAL

Kent S. Tarbutton, Lake Elmo, and Ronald O. Zemke, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 10, 1979, Ser. No. 65,609
Int. Cl.[3] B32B *5/16*
U.S. Cl. 428—149 13 Claims



1. A friction surface sheet material capable of being adherently attached to the surface of a substrate of the type which may have an ornamental pattern on said surface and which sheet material, when attached to said surface, permits visual observation of said pattern therethrough, said sheet material comprising:

(1) a transparent backing layer formed of a dimensionally stable, biaxially oriented, transparent polymeric film having an upper and a lower major surface;

(2) a first coating of a first tough transparent binder material

having an elongation of at least 40% and a tensile strength of at least 1000 psi adherently bonded to said upper major surface;

(3) a second coating of a second tough transparent binder material useful for pedestrian traffic and having an elongation of at least 40% and a tensile strength of at least 1000 psi adherently bonded to the exposed surface of said first coating of said first transparent binder material;

(4) a multitude of minute transparent glass particles no larger than 10 Tyler mesh and capable of withstanding pedestrian traffic without significant fracture uniformly distributed over said upper major surface and firmly adherently bonded thereto by said first and said second transparent binder materials with a combined thickness of said binder materials which is sufficient to substantially prevent particle loss under pedestrian use, with the tops of said glass particles projecting above the exposed surface of said second coating to provide a friction surface; and

(5) a layer of transparent pressure-sensitive adhesive material over the bottom surface of said backing layer to facilitate attachment of said friction surface material to a substrate.

4,328,275

DISPOSABLE FLOOR MAT

Louis M. Vargo, 504 W. 24th St., Covington, La. 70433

Filed Sep. 10, 1980, Ser. No. 185,665

Int. Cl.³ B32B *3/30, 5/02*

U.S. Cl. 428—156 **7 Claims**

1. A disposable floor mat for bathrooms and the like comprising a sheet of liquid absorbent matting having a top surface, a bottom surface, and a multiplicity of raised portions and depressed portions distributed over substantially the entire top surface of the matting, said raised portions having a liquid repellent coating thereon for deflecting liquid falling onto the mat down onto said depressed portions for being absorbed by the matting, said raised portions being of a substantially rigid substantially incompressible material for supporting the feet of a person standing on the mat above said depressed portions whereby the feet of the person are maintained relatively dry.

4,328,276

GLASS MIRROR MAT CONSTRUCTION AND METHODS FOR FORMING AND USING THE SAME

Daniel Swarovski, Wattens, Austria, assignor to D. Swarvoski & Co., Glasschleiferei, Wattens, Austria

Continuation of Ser. No. 804,318, Jun. 7, 1977, abandoned. This application Feb. 11, 1980, Ser. No. 120,596

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1976, 2626842

Int. Cl.³ B32B *3/10, 3/14, 3/16, 17/06*

U.S. Cl. 428—213 **10 Claims**

1. A glass mirror mat comprising a plurality of glass strips having opposite surfaces; a supporting film for said strips; each of said strips having one surface releasably adhesively secured to said film; each of said strips having a surface opposite to said one surface and comprising a reflective layer for substantially completely reflecting light striking the same.

6. The glass mirror mat of claim 1 in which each of said glass strips has a thickness of about 0.3 to 2 mm and a width of about 0.5 to 3 cm and a length of about 10 to 100 cm.

4,328,277

IMPACT RESISTANT LAMINATE

Richard E. Molari, Jr., Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 862,775, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 650,446, Jan. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 464,603, Apr. 26, 1974, abandoned. This application Jun. 11, 1980, Ser. No. 158,486

The portion of the term of this patent subsequent to Jun. 13, 1992, has been disclaimed.

Int. Cl.³ B32B *27/36, 7/02*

U.S. Cl. 428—215 **10 Claims**

1. Impact or shock resistant laminate comprising a plurality of impact or shock receiving layers selected from the group consisting of polycarbonates, glasses, and solid resinous materials other than polycarbonates, including a back polycarbonate lamina opposite the direction of impact or shock, said back polycarbonate lamina having a mar-resistant coating 0.05 to 1 mils thick and which is harder and relatively more brittle than the underlying polycarbonate layer opposite the direction of impact, said back polycarbonate lamina having a thickness from about 30 mils to about 220 mils, the laminae being bonded together by a compatible adhesive.

4,328,278

COPOLYESTER ADHESIVES

Bobby J. Sublett, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 81,232, Oct. 2, 1979, Pat. No. 4,252,940. This application Oct. 20, 1980, Ser. No. 198,575

Int. Cl.³ C08G *63/16*

U.S. Cl. 428—246 **2 Claims**

1. A textile fabric laminated to a substrate by means of a fusible interlining adhesive comprising a copolyester derived from at least 40 mol percent terephthalic acid, about 10 to about 90 mole percent 1,6-hexanediol and about 90 to about 10 mol percent diethylene glycol, said copolyester having a crystalline melting point of about 40°–130° C., a glass transition temperature of about −10 to about 30° C. and a heat of fusion of about 1–10 calories per gram.

4,328,279

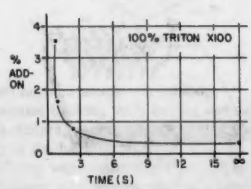
CLEAN ROOM WIPER

Gary H. Meitner, and Stephen M. Englebert, both of Winnebago County, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 29, 1981, Ser. No. 230,016

Int. Cl.³ D04H *1/58*

U.S. Cl. 428—289 **12 Claims**



1. A wiper comprising a nonwoven substrate having a basis

weight in the range of from 0.25 oz/yd^2 to 6 oz/yd^2 and comprising treated, hydrophobic, thermoplastic fibers, said substrate containing 0.2 to 0.7% by weight of sodium dioctyl sulfosuccinate and a nonionic surfactant as a mixture containing 25 to 75% by weight of sodium dioctyl sulfosuccinate, said wiper having a sodium ion content of less than 100 parts per million and a wettability as determined by the sink time method of less than 5 seconds.

4,328,280

SUPPRESSION OF SPARK DISCHARGES FROM NEGATIVELY TRIBOELECTRICALLY CHARGED SURFACES

John S. Huizinga, and John Stevens, both of Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 14, 1979, Ser. No. 38,698

Claims priority, application United Kingdom, May 15, 1978, 19554/78

Int. Cl.^{3} G03C *1/82;* **B32B** *27/36, 9/00*

U.S. Cl. 428—411 **10 Claims**

1. A method of suppressing spark discharge from a surface which is capable of becoming negatively triboelectrically charged which comprises applying to said surface an isopropylbenzene compound having a substituent in the 2- or 4-position relative to the isopropyl group which has a Hammett σ_p constant of from -0.17 to $+0.82$ or a substituent in the 3-position relative to the isopropyl group which has a σ_m constant of from 0.0 to $+0.88$.

5. A surface capable of being negatively triboelectrically charged which has coated and dried thereon an isopropylbenzene compound having a substituent in the 2- or 4- position relative to the isopropyl group which has a Hammet σ_p constant of from -0.17 to $+0.82$ or a substituent in the 3-position related to the isopropyl group which has a σ_m constant of from 0.0 to $+0.88$.

4,328,281

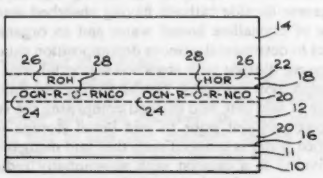
DIMER ISOCYANATE LINER COMPOSITIONS

John M. Wrightson, Sacramento, Calif., assignor to Aerojet-General Corporation, La Jolla, Calif.

Continuation of Ser. No. 292,196, Sep. 25, 1972, abandoned. This application Aug. 24, 1979, Ser. No. 69,260

Int. Cl.^{3} F02K *9/04;* **C06B** *45/10;* **F42B** *1/00;* **B32B** *27/40*

U.S. Cl. 428—423.1 **11 Claims**



1. A composite article comprising a rocket motor casing and a fully cured polyurethane liner, in which is dispersed a stable, solid organic polyisocyanate precursor which does not migrate, in excess of the stoichiometric amount of isocyanate necessary to form said polyurethane, and which is reactive after cure of the liner with organic active-hydrogen containing compounds in a curable propellant composition, said precursor being present in an effective amount for forming interfacial bonds between said liner and said curable propellant composition upon curing thereof in contact with said liner.

4,328,282

MAGNETIC RECORDING MEDIA

August Lehner, Roedersheim-Gronau; Heinrich Hartmann, Limburgerhof; Rudolf Bachmann, Frankenthal; Werner Balz, Limburgerhof, and Albert Kohl, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,677

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 3005009

Int. Cl.^{3} H01F *10/02*

U.S. Cl. 428—425.9 **3 Claims**

1. A magnetic recording medium comprising a non-magnetic base and, applied thereto, at least one magnetizable layer, based on an anisotropic magnetic material finely dispersed in an organic binder, containing an ionomeric polyurethane elastomer, the binder used being a substantially aqueous polyurethane dispersion prepared from a polyurethane solution which has been obtained by reacting a polyisocyanate with an organic polyhydroxy compound in the presence of an organic solvent that is inert to isocyanate groups, wherein a polyisocyanate is reacted with a mixture of

(a) at least one acrylic or methacrylic ester diol having a molecular weight of from 146 to 3000,

(b) at least one organic polyhydroxy compound which is different from (a) and has a molecular weight of from 400 to 5000, and optionally

(c) at least one diol, diamine, aminoalcohol or triol which is different from (a) and has a molecular weight of from 62 to 400, or water,

in an NCO/OH ratio of 0.85:1 to 15:1, the salt of a mercaptocarboxylic acid is added in such an amount to the reaction product thus obtained that the adduct contains 0.5 to 10% by weight of carboxylate groups, the solution of this adduct is then converted into an aqueous dispersion by the addition of water, and the organic solvent is removed.

4,328,283

PHOTOGRAPHIC POLYESTER SUPPORTS SUBJECTED TO SUBBING TREATMENT

Takanori Nakadate, Hachioji; Naoto Abe; Kenichi Kitahara, both of Hino, and Hironobu Nakao, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,200

Claims priority, application Japan, Nov. 20, 1978, 53-143063

Int. Cl.^{3} B32B *27/06;* **B05D** *3/06*

U.S. Cl. 428—480 **9 Claims**

1. A photographic polyester support having an adjacent sub layer containing a copolymer consisting essentially of (1) 30–70 wt% glycidyl acrylate and/or glycidyl methacrylate monomer, (2) 3–45 wt% hydroxyalkyl acrylate having an alkyl group of 2 to 4 carbon atoms and/or hydroxyalkyl methacrylate monomer, and (3) 0–67 wt% copolymerizable vinyl monomer.

4,328,284

COATING OF PAPER

Pierre F. LePoutre, 6 Westwood Dr., Pointe Claire, Quebec, Canada

Filed Mar. 4, 1980, Ser. No. 127,056

Claims priority, application Canada, Apr. 5, 1979, 324932

Int. Cl.^{3} B05D *3/02;* **B32B** *23/08, 27/10*

U.S. Cl. 428—511 **12 Claims**

1. A process comprising applying a layer of a coating consisting essentially of a minor amount of a latex of a film forming polymer and a major amount of a pigment to a substrate, drying the coating at a temperature below the minimum film forming temperature of the polymer in the latex and under conditions adapted to prevent the coalescence of the polymer particles in the latex and subsequently heating the dried coating at a temperature at least as high as the minimum film form-

ing temperature of the polymer without subjecting the dried coating to compressive force.

8. A product made according to the process of claim 1.

4,328,285

METHOD OF COATING A SUPERALLOY SUBSTRATE, COATING COMPOSITIONS, AND COMPOSITES OBTAINED THEREFROM

Paul A. Siemers, Clifton Park, and Douglas W. McKee, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,764
Int. Cl.³ B32B *15/20*; B05D *1/10*
U.S. Cl. 428—633 4 Claims

1. A method for improving the oxidation resistance and corrosion resistance of a superalloy substrate from accelerated failure resulting from exposure to turbine fuel having vanadium or sulfur oxide impurities which comprises plasma spraying the surface of the superalloy substrate with a metallic alloy material to form a metallic bonding layer followed by plasma spraying with zirconium oxide that is stabilized with cerium oxide particles to form a CeO_2-ZrO_2 ceramic coating containing at least about 15% by weight of CeO_2.

4. A gas turbine article having improved resistance to oxidation and corrosion resulting from accelerated failure due to exposure to turbine fuel having vanadium or sulfur oxide impurities comprising a superalloy substrate, a metallic bonding layer and an exterior zirconium oxide that is stabilized with cerium oxide ceramic coating containing at least 15% by weight of CeO_2.

4,328,286

ELECTRODEPOSITED PALLADIUM, METHOD OF PREPARATION AND ELECTRICAL CONTACT MADE THEREBY

Jeffrey N. Crosby, Worcester, England, assignor to The International Nickel Co., Inc., New York, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,386
Claims priority, application United Kingdom, Apr. 26, 1979, 14529/79
Int. Cl.³ C25D *5/10*; H01H *1/02*
U.S. Cl. 428—636 32 Claims

1. A method of producing an electrical contact material having high resistance to oxidation and corrosion and good electrical conductivity comprising a duplex coating of electroplated palladium on a substrate comprising electroplating on the substrate a first layer of palladium from a first aqueous bath having an alkaline pH and comprising a cationic palladium ammine complex and free ammonia, and then on the first layer of palladium electrodepositing a second layer of palladium from a second aqueous bath having an acid pH and comprising the anionic complex $Pd(NO_2)_4^{2-}$, whereby a duplex coating is produced having low transverse porosity and good slip wear resistance.

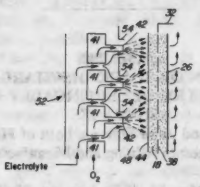
12. An electrical contact material comprising a substrate and a duplex electroplated coating of palladium having low transverse porosity and good slip wear resistance produced from the method comprising electroplating on the substrate a first layer of palladium from a first aqueous bath having an alkaline pH and comprising a cationic palladium ammine complex and free ammonia, and then on the first layer of palladium electrodepositing a second layer of palladium from a second aqueous bath having an acid pH and comprising the anion complex $Pd(NO_2)_4^{2-}$.

4,328,287

GAS FLOW THROUGH ELECTRODES

Anthony F. Sammells, Naperville, Ill., and Michael J. Powers, LaGrangeville, N.Y., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Jan. 23, 1981, Ser. No. 227,704
Int. Cl.³ H01M *8/08*
U.S. Cl. 429—15 24 Claims



1. In an electrochemical cell of the type having liquid electrolyte, a counterelectrode, and a gas flow through electrode in communication with and separated from said counterelectrode by electrolyte in an electrolyte zone; the improvement in said electrode comprising:

a porous flow through matrix having a plurality of pores, electrocatalysts supported on the surfaces of said matrix within said pores, means for supplying a plurality of electrochemically reducible or oxidizable gas bubbles having a smaller average diameter than the average diameter of said pores to a colloid forming zone on the side of said flow through matrix away from said counterelectrode, means for supplying electrolyte to said colloid forming zone, and means for passing a colloid of said electrochemically reducible or oxidizable gas bubbles and said electrolyte through said pores in said electrode matrix to said electrolyte zone separating said electrode and counterelectrode.

4,328,288

METHOD FOR IMPROVING STABILITY OF LI/MNO_2 CELLS

Alwyn H. Taylor, Wellesley Hills, Mass., assignor to Duracell International Inc., Bethel, Conn.

Filed Jul. 25, 1980, Ser. No. 173,510
Int. Cl.³ H01M *4/08*
U.S. Cl. 429—48 19 Claims

1. A method for improving the stability of a non-aqueous cell containing an anode comprised of a metal selected from the group consisting of alkali metals, alkaline earth metals and aluminum, said cell further containing a catalytically active manganese dioxide cathode having absorbed water therein in excess of crystalline bound water and an organic electrolyte subject to detrimental gaseous decomposition catalyzed by said manganese dioxide with absorbed water, wherein said gaseous decomposition normally results during the initial extended storage of said cell; said method comprising the step of predischarging said cell prior to said initial storage whereby said absorbed water is reduced such that said manganese dioxide is deactivated as a catalyst with substantially reduced gaseous decomposition of said organic electrolyte.

4,328,289

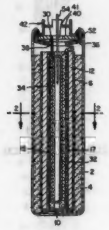
ELECTROCHEMICAL CELL HAVING A RESEALABLE VENT CLOSURE

Ronald L. Zupancic, Parma Heights, and Lewis F. Urry, Columbia Station, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 26, 1980, Ser. No. 190,989
Int. Cl.³ H01M *2/12*
U.S. Cl. 429—54 8 Claims

1. An electrochemical cell in which the active components

of the cell are assembled within a housing comprising a container closed at its open end by a cover and having at least one vent orifice for releasing pressurized material from within the housing; the improvement being a resealable vent closure comprising in combination a resilient deformable member of an elastomeric material positioned to overlie said vent orifice, a retainer means for compressing said resilient deformable member against said vent orifice thereby forming a normally fluid-tight seal at said orifice, said retaining means comprising a



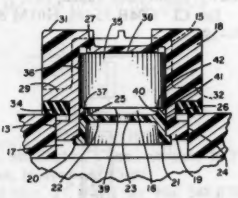
cylindrical cap member surrounding said resilient deformable member and said vent orifice and being secured at one of its ends to the housing and having at its opposite end a plurality of extending tabs, a retainer element positioned within said cap member and disposed over and compressing said resilient deformable member over said vent orifice and whereby at least a numerical portion of said extending tabs is turned over the retainer element thereby securing said retainer element against said compressed resilient deformable member.

4,328,290

BATTERY VENT PLUG

Joseph Szymborski, Bartlett, and Frank D. Unetic, Elgin, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 29, 1980, Ser. No. 221,158
Int. Cl.³ H01M *2/12*
U.S. Cl. 429—54 **9 Claims**



1. A battery vent plug comprising:

a housing having a mounting portion adapted to be mounted in a battery cover opening, a vent chamber, an annular seat confronting said vent chamber, an inlet opening through said seat to said vent chamber, and an outlet opening through a portion of said housing spaced from said inlet;

a resilient body in said chamber having a sealing portion adjacent said inlet, a force transfer portion opposite said sealing portion adjacent said outlet, and defining a sidewall therebetween; and

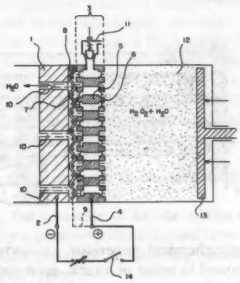
means on said housing for applying a compressive force to said force transfer portion directed through said body to urge said sealing portion against said seat for compressing said body and releasably sealingly closing said inlet, the compression of the body being preselected to provide a preselected sealing force while causing radial expansion of said sidewall to be spaced closely inwardly of the vent chamber wall, said resilient body being further compressed toward said force transfer portion as a result of an elevated fluid pressure in said inlet sufficient to overcome said compressive sealing force and space said sealing portion from said seat and permit flow of the fluid through said vent chamber about the length of said resilient body through the space between said sidewall and the vent chamber wall to said outlet, and to permit said resilient body to have said sealing portion resealed to said seat upon dropping of the fluid pressure to below said preselected fluid pressure.

4,328,291

LITHIUM PEROXIDE PRIMARY ELEMENT

August Winsel, Kelkheim am Taunus, Fed. Rep. of Germany, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 169,953
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930056
Int. Cl.³ H01M *6/22*
U.S. Cl. 429—101 **5 Claims**



1. A galvanic primary element having a negative light metal electrode and hydrogen peroxide as the cathode depolarizer, wherein

the hydrogen peroxide is fixated in a gel formed with polyurethane or with branched polyacrylic acid,

the hydrogen peroxide-containing gel is positioned adjacent an electrical conductor which covers the surface of the light metal electrode and

means are provided within the cell for pressing the gel against the conductor.

4,328,292

PHOTOCURED TUBULAR BATTERY ELECTRODE AND METHOD OF MAKING SAME

William R. Remer, Bensalem, Pa.

Filed May 5, 1980, Ser. No. 146,797
Int. Cl.³ H01M *2/18*
U.S. Cl. 429—140 **16 Claims**

1. An improved tubular battery plate of the type having a first electrically conductive cross member, a plurality of spaced electrically conductive spines extending from the first cross member, a glass braid sheath enveloping each spine and

forming a tube therewith, active material disposed within the tube, a second nonconductive cross member affixed to and sealing the tube, the improvement which comprises the sheath being fabricated by:

(a) saturating the braid with a photocurable resin,

(b) curing the braid by exposing the braid to at least one light source so that the braid becomes rigid,

(c) shaping the braid into a sheath, and

(d) sizing the sheath to preselected lengths.

4,328,293

ELECTROCHEMICAL GENERATORS

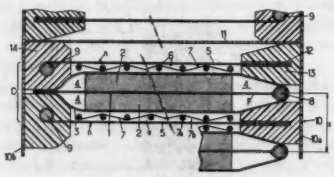
Jean-Pierre, J. Lisse, Athis-Mons, France, assignor to Automobiles Citroen and Automobiles Peugeot, Paris, France

Filed Oct. 15, 1980, Ser. No. 197,015

Claims priority, application France, Oct. 16, 1979, 79 25711

Int. Cl.³ H01M *2/20*

U.S. Cl. 429—149 **7 Claims**



1. An electrochemical generator, comprising at least two elements mounted in series in a tank, each element comprising a plurality of cells mounted in parallel, each cell comprising

a positive electrode surrounded by a chemically inert separator, a negative electrode, and an electrolyte solution, each electrode comprising

a conductive support having thereon a layer of active material, and an electrical conductor connected to a side of said conductive support, said electrical conductors of a single element having the same polarity being located on one side of the tank, while the electrical conductors of opposite polarity are located on the opposite side of the tank, the conductive wires of the same polarity of a single element being connected in parallel with each other by a conductive bar having notches adapted to receive the ends of the conductive wires and to place in series the conductive wires of opposite polarities of two adjacent elements.

4,328,294

SOLID ELECTROLYTE FOR USE IN OXYGEN CONCENTRATION SENSOR

Katsuhiko Tanaka, Toyokawa; Toshitaka Saito, Toyohashi; Masatoshi Suzuki, Anjo, and Masami Ouki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

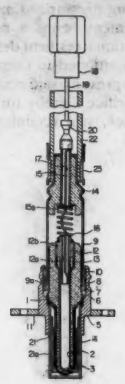
Filed Feb. 5, 1981, Ser. No. 231,842

Claims priority, application Japan, Feb. 7, 1980, 55-14606

Int. Cl.³ C04B *35/48;* H01M *6/18*

U.S. Cl. 429—193 **8 Claims**

1. A solid electrolyte for an oxygen concentration sensor, consisting essentially of a sintered body of zirconia having a crystal structure including crystal grains of a cubic phase and having a surface-average grain size of about 5 microns or less, said structure being changed, on finely grinding, into a structure in which a cubic phase and a monoclinic phase coexist and



the proportion of the monoclinic phase is no greater than about 5% or less by weight based on the total of both the phases.

4,328,295

SOLID ELECTROLYTE FOR USE IN OXYGEN CONCENTRATION SENSOR

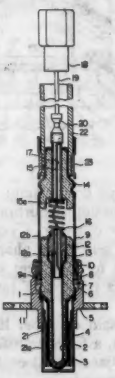
Katsuhiko Tanaka, Toyokawa; Toshitaka Saito, Toyohashi; Masatoshi Suzuki, Anjo, and Masami Ouki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 5, 1981, Ser. No. 231,843

Claims priority, application Japan, Feb. 7, 1980, 55/14608

Int. Cl.³ C04B *35/48;* H01M *6/18*

U.S. Cl. 429—193 **9 Claims**



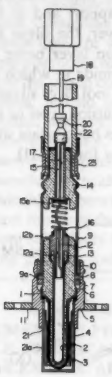
1. A solid electrolyte for an oxygen concentration sensor, consisting essentially of a sintered body of completely stabilized zirconia having a crystal structure of a cubic phase alone and having a surface-average grain size of about 5 microns or less, said sintered body having a cubic phase alone even in a finely ground state.

4,328,296

SOLID ELECTROLYTE FOR USE IN OXYGEN CONCENTRATION SENSOR

Katsuhiko Tanaka, Toyokawa; Toshitaka Saito, Toyohashi; Masatoshi Suzuki, Anjo, and Masami Ouki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 5, 1981, Ser. No. 231,844
Claims priority, application Japan, Feb. 7, 1980, 54/14607
Int. Cl.[3] C04B *35/48;* H01M *6/18*
U.S. Cl. 429—193 9 Claims



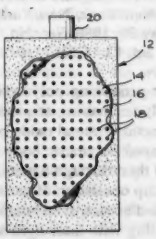
1. A solid electrolyte for an oxygen concentration sensor, consisting essentially of a sintered body of partially stabilized zirconia having a crystal structure including crystal grains of a cubic phase and a monoclinic and/or tetragonal phase and having a surface-average grain size of about 5 microns or less, said structure being changed, on finely grinding, into a structure in which a cubic phase and a monoclinic phase coexist and the proportion of the monoclinic phase is about 5% or less by weight based on the total of both the phases.

4,328,297

ELECTRODE

John M. Bilhorn, Stonington, Conn., assignor to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Mar. 27, 1981, Ser. No. 248,078
Int. Cl.[3] H01M *4/36*
U.S. Cl. 429—222 11 Claims



1. An improved electrode for an electrochemical cell, said electrode comprising, in combination:

a. a body comprising electrochemically active material selected from the group consisting of zinc, zinc oxide, cadmium, cadmium oxide and mixtures thereof; and,

b. a current collector in contact with said body, said current collector being an alloy having at least about 40 percent, by weight of said alloy, of bismuth, and at least about 25 percent, by weight of said alloy, of lead.

4,328,298

PROCESS FOR MANUFACTURING LITHOGRAPHY MASKS

James F. Nester, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 27, 1979, Ser. No. 52,514
Int. Cl.[3] C23F *1/00*
U.S. Cl. 430—5 9 Claims

1. A method of making a lithography mask which comprises:

(a) providing a substrate which is transparent to the radiation to be used in the lithography process;

(b) depositing on said substrate a flash layer of chromium;

(c) depositing on said layer of chromium a thin first layer of a metal suitable for electroless plating;

(d) covering said first metal layer with a layer of photoresist;

(e) exposing the photoresist through a master mask to thereby expose areas at which lithographic radiation absorption is desired;

(f) developing the photoresist to uncover the thin first metal layer in said areas;

(g) immersing the substrate in an electroless metal plating bath whereby a relatively thick second layer of said metal is preferentially precipitated onto the uncovered areas of said first metal layer; and

(g) removing the plated substrate from said bath;

(h) removing the remaining portion of the layer of photoresist;

(i) etching the plated substrate to remove a thickness of metal substantially equal to the thickness of said first metal layer.

4,328,299

POLYCHROMATIC GLASSES AND METHOD

George H. Beall, Big Flats; Syed N. Hoda, Horseheads, and Richard W. Waldron, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 23, 1980, Ser. No. 171,655
Int. Cl.[3] G03C *1/00, 5/24*
U.S. Cl. 430—13 14 Claims

1. In a transparent polychromatic glass article wherein a portion of the article contains microcrystals of alkali fluoride with at least one silver halide selected from the group consisting of silver chloride, silver bromide, and silver iodide in a concentration of at least 0.005% by volume, and wherein the same portion is integrally colored by metallic silver particles less than 200 A in the smallest dimension, the silver particles being deposited (a) as discrete colloidal particles, (b) within the microcrystals, and/or (c) on the surface of said microcrystals, the glass being characterized by the presence of ions of copper, samarium, terbium, praeseodymium, and/or europium in their higher oxidation state, and a portion of the article contains sodium fluoride, at least one silver halide selected from silver chloride, silver bromide, and silver iodide, and at least one sensitizing agent selected from the ions of copper, samarium, terbium, praeseodymium, and/or europium in their lower oxidation state.

7. A method of making a transparent polychromatic glass article, wherein a portion of the article is integrally colored by silver, consisting of,

melting a glass batch containing the constituents of an alkali fluoride and at least one silver halide selected from the group consisting of silver chloride, silver bromide and silver iodide, and at least one sensitizing agent selected from the oxides of copper, samarium, terbium, praseodymium, and europium,

forming an article from such melt, wherein said sensitizing agent being present as ions in their lower oxidation state,

exposing a portion of such article to ultraviolet radiation at ambient temperature,

heating the exposed glass to a temperature between its transformation range and its softening point, for a sufficient length of time to cause growth of microcrystals of alkali fluoride with at least one silver halide selected from the group consisting of silver chloride, silver bromide and silver iodide,

thereafter subjecting the article to a second ultraviolet radiation exposure and a second heat treatment to cause metallic silver particles less than 200 A in the smallest dimension to be deposited as discrete colloidal particles, or within or on the surface of the alkali fluoride microcrystals, and,

cooling the article.

4,328,300

Patent Not Issued For This Number

4,328,301

STRIPPING LAYERS IN DIFFUSION TRANSFER FILM

Peter J. Wright, Ilford, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Sep. 18, 1980, Ser. No. 188,428

Claims priority, application United Kingdom, Oct. 12, 1979, 35519/79

Int. Cl.³ G03C *1/99, 11/12*

U.S. Cl. 430—215 **8 Claims**

1. A photographic assembly which comprises at least one photosensitive layer and an image receiving layer in which after exposure and processing an image is formed by an imagewise diffusion of a substance or substances from the photosensitive layer or layers, or a layer in operative contact therewith and a support, there being present between the photosensitive layer or layers and the said image receiving layer a stripping layer consisting of a graft copolymer of gelatin where, in the gelatin, all the primary amino groups are blocked by the gelatin fully reacted with a dicarboxylic acid anhydride selected from phthalic anhydrides, succinic anhydrides and glutaric anhydrides in alkaline medium and a monomer of a vinyl ester, a vinyl ether, an acrylic ester, an acrylic ether, a methacrylic ester or a methacrylic ether or a mixture thereof, the proportion of reacted gelatin to monomer in the graft copolymer being from 1 gelatin to 0.25 monomer by weight to 1 gelatin to 1.5 monomer by weight, there being optionally other layers present in the photographic assembly between the lowest photosensitive layer and the image receiving layer, the said stripping layer being present between two gelatin based layers.

4,328,302

LITHOGRAPHIC SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tatsuo Nishimura, Ashiya; Hiroyuki Mifune, Ashigara; Yoshiharu Fuseya, Ashigara; Yukihide Urata, Ashigara; Tadao Shishido, Ashigara, and Yasuo Kasama, Ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

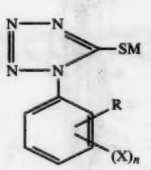
Filed Feb. 9, 1981, Ser. No. 232,483

Claims priority, application Japan, Feb. 8, 1980, 55/14625

Int. Cl.³ G03C *1/06*

U.S. Cl. 430—264 **17 Claims**

1. A lithographic silver halide photographic light-sensitive material comprising a support and at least one lithographic silver halide emulsion layer, the silver halides of said at least one silver halide emulsion layer being silver chlorobromide and silver chloroiodobromide in which at least 60 mole % of silver chloride and 0 to 5 mol % of silver iodide are contained, and containing in said emulsion layer or in another hydrophilic colloidal layer which does not contain silver halide at least one compound represented by formula (I)



wherein M represents hydrogen, an alkali metal ion or $-NH_4^{\oplus}$; X represents $-SO_2NR'$, $-COOM'$, $-SO_3M'$, $-OH$ or $-CONH_2$, wherein M' represents hydrogen, an alkali metal ion or $-NH_4^{\oplus}$; and R' represents hydrogen or an alkyl group having from 1 to 3 carbon atoms; R represents hydrogen or an alkyl group having from 1 to 3 carbon atoms; and n represents 1 to 2.

4,328,303

PREPARATION OF METAL CONTAINING POLYMERIC MATERIAL VIA LASER CHEMISTRY

Avigdor M. Ronn, Great Neck, N.Y.; Philip Bernstein, Glen Ridge; Harvey C. Branch, Ramsey, both of N.J., and James P. Coffey, Warwick, N.Y., assignors to Research Foundation of City University of New York, New York, N.Y.

Filed May 30, 1980, Ser. No. 154,960

Int. Cl.³ G03C *5/04*

U.S. Cl. 430—290 **1 Claim**

1. The method for producing polymeric bodies made of a light-transmitting polymer having at predetermined locations therein fine opaque metal or metal oxide particles which comprises providing a shaped polymeric body having substantially uniformly distributed therethrough a metal-organic compound selected from the group consisting of carbonyls, bis-cyclopentadienyls, arenes, mixed arenes, arene-carbonyl complexes and ferrocene and irradiating with laser light selected areas of said shaped polymeric body, said laser light irradiation acting within said selected areas to decompose at least a portion of said metal-organic compound to provide in said irradiated areas opaque metal or metal oxide particles.

4,328,304

DESENSITIZING SOLUTION FOR LITHOGRAPHIC PRINTING PLATE

Hiromichi Tachikawa; Yohonosuke Takahashi; Kazuo Ishii; Tomoaki Ikeda, and Fumiaki Shinozaki, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 24, 1979, Ser. No. 78,267
Claims priority, application Japan, Sep. 22, 1978, 53/117728
Int. Cl.[3] G03F *7/02*
U.S. Cl. 430—331 17 Claims

1. A desensitizing solution which is to be applied to the surface of a lithographic printing plate coated with a photosensitive layer composed of a photopolymerizable composition, said desensitizing solution containing a hydrophilic colloid, a free radical polymerization inhibitor which is not a developing agent for silver halide photographic materials and is an organic compound selected from the group consisting of quinone compounds, nitro compounds, nitroso compounds, nitron compounds, α- or β-naphthol, tertiary butyl catechol, tertiary butyl phenol, 2,4,6-trimethylphenol, cresol, o-, m- or p-isopropylphenol, 2-amino-4-methylphenol, disulfides, mercaptans, thioethers, dithiocarbamic acids, sulfene amides, phosphates, phosphites, phosphines, borates, phenyl-β-naphthylamine, diphenylamine and mixtures thereof in an amount sufficient to normally prevent selectively the formation of stain on non-imaged areas during printing, and water.

4,328,305

SURFACE TREATMENT OF PHOTOTHERMALLY CRYSTALLIZABLE, CHEMICALLY-MACHINABLE GLASS-CERAMIC ARTICLES

Herbert E. Rauscher, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,579
Int. Cl.[3] C03B *32/00*
U.S. Cl. 430—351 6 Claims

1. A method for rendering a photothermally crystallizable, chemically-machinable, glass-ceramic article non-sticking with respect to the reaction products of moisture and organic materials, which comprises the steps of:

(a) a batch is melted for a glass consisting essentially, expressed in weight percent on the oxide basis, of 5.5–15% Li_2O, 2–25% Al_2O_3, the ratio Al_2O_3:Li_2O being less than about 1.7:1, 60–85% SiO_2, and a photosensitive metal in the indicated proportions selected from the group of 0.001–0.03% gold, computed as Au, 0.001–0.3% silver, computed as AgCl, and 0.001–1% copper, computed as Cu_2O, the sum of those components constituting at least 90% of the total composition;

(b) the melt is simultaneously cooled to a glass and an article of desired geometry shaped therefrom;

(c) the glass article is subjected to ultraviolet radiation to form a latent image in the glass;

(d) the glass article is heated to a temperature between the annealing point and the softening point of the glass for a time sufficient to opacify the glass by forming siliceous crystallites therein, including lithium metasilicate, in an amount sufficient to provide a crystalline structure which is rigid enough to prevent distortion of the article upon heating to a softening point of the original glass;

(e) the article is heated to a temperature above the softening point of the original glass and about 800° C., but not above 950° C., to cause further crystallization, including conversion of lithium metasilicate to a lithium-containing silicate having a lower weight percentage of lithium therein, thereby transforming the article to a glass-ceramic article;

(f) exposing the glass-ceramic article to SO_2 vapors at a temperature between about 350°–600° C. for about 1–10 hours to cause a reaction to occur to a depth of at least 50 microns (~0.002") in the surface of the article between Li^+ ions and SO_2 vapors to form a water soluble deposit of Li_2SO_3 and/or Li_2SO_4 thereon; and

(g) removing the deposit of Li_2SO_3 and/or Li_2SO_4 from the surface of the glass-ceramic article.

4,328,306

PROCESSING METHOD FOR COLOR PHOTOGRAPHIC MATERIALS

Yoshio Idota, and Minoru Yamada, both of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 27, 1980, Ser. No. 181,560
Claims priority, application Japan, Aug. 29, 1979, 54-110003
Int. Cl.[3] G03C *5/32*
U.S. Cl. 430—393 12 Claims

1. A method for processing silver halide color photographic materials comprising bleaching silver halide color photographic materials with a bleach solution containing an organic acid metal complex salt and hydrogen peroxide or a compound releasing hydrogen peroxide wherein said hydrogen peroxide or said compound releasing hydrogen peroxide is present in an amount providing at least 0.02 mol hydrogen peroxide per liter of bleach solution, while adding thereto a replenisher composed separately of a first composition containing hydrogen peroxide or a compound releasing hydrogen peroxide and a second composition containing an organic acid metal complex salt.

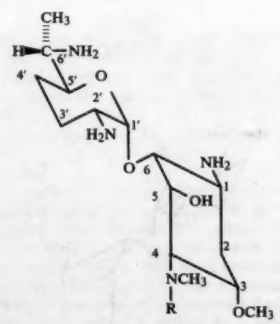
4,328,307

NOVEL ANTIBIOTICS, PROCESS FOR PREPARATION THEREOF AND BIOLOGICALLY PURE CULTURE FOR USE THEREIN

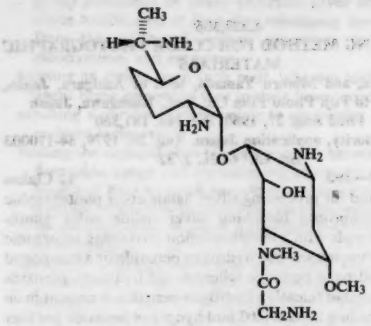
Toshihito Mori; Takeo Deushi; Akio Iwasaki; Takafumi Kunieda; Toshimi Mizoguchi; Kazuhiro Kamiya; Masahito Nakayama, all of Higashimurayama; Hisakatsu Ito, Kawagoe, and Takeshi Oda, Kodaira, all of Japan, assignors to Kowa Company, Ltd., Japan

Division of Ser. No. 888,149, Mar. 16, 1978, Pat. No. 4,206,206.
This application Oct. 26, 1978, Ser. No. 955,412
Int. Cl.[3] C12P *19/48*
U.S. Cl. 435—80 4 Claims

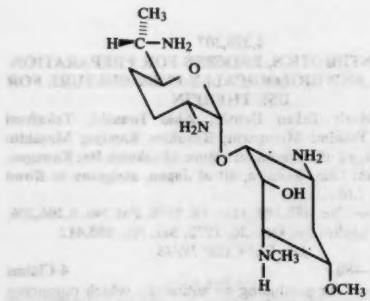
1. A process for producing an antibiotic, which comprises cultivating *Saccharopolyspora hirsuta* KC-6606 strain, isolating the antibiotic KA 6606 having the formula,



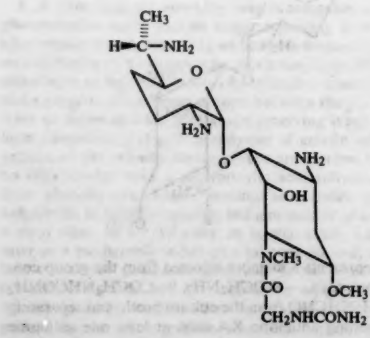
wherein R represents a member selected from the group consisting of hydrogen, —$COCH_2NH_2$, —$COCH_2NHCONH_2$ and —$COCH_2NHCHO$ from the culture broth, and separating from the resulting antibiotic KA-6606 at least one antibiotic selected from the group consisting of antibiotic KA-6606 I having the formula,



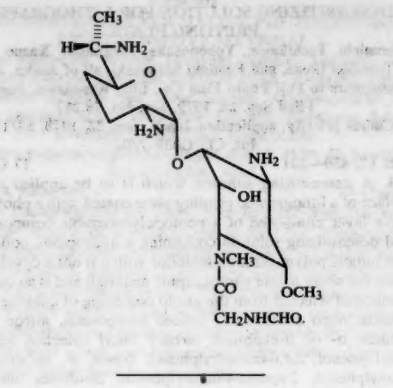
antibiotic KA-6606 II having the formula,



antibiotic KA-6606 III having the formula,



and antibiotic KA-6606 IV having the formula,



4,328,308

SEMI-CONTINUOUS METHOD FOR PRODUCTION OF XANTHAN GUM USING *XANTHOMANAS CAMPESTRIS* ATCC 31600 AND *XANTHOMANAS CAMPESTRIS* ATCC 31602

William P. Weisrock, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 168,970, Jul. 14, 1980, abandoned. This application Apr. 16, 1981, Ser. No. 254,695

Int. Cl.[3] C12P *19/06*

U.S. Cl. 435—104 **11 Claims**

1. A method for the production of xanthan gum which comprises introducing a culture of a degenerative resistant strain of selected bacteria from the group consisting of *Xanthomonas campestris* XCP-1 *Xanthomonas campestris* P-107, having the identifying characteristics of ATCC 31600 and ATCC 31602, respectively, into a fermentation zone containing a nutrient medium to produce both bacterial cell growth and xanthan gum, withdrawing a portion of the fermented medium from said zone, recovering xanthan gum from said portion, thereafter adding a fresh sterile volume of said medium to the residual liquid in said zone and repeating the above cycle.

4,328,309

METHOD FOR PRODUCING TRIPDIOLIDE, TRIPTOLIDE AND CELASTROL

William T. Chalmers; James P. Kutney; Phillip J. Salisbury; Kenneth L. Stuart; Phillip M. Townsley, and Brian R. Worth, all of Vancouver, Canada, assignors to The United States of America as represented by the Secretary of the Department of Health & Human Services, Washington, D.C.

Filed Jul. 2, 1980, Ser. No. 165,336

Int. Cl.[3] C12N *5/00, 15/00*

U.S. Cl. 435—126 **9 Claims**

1. A process for obtaining tripdiolide, triptolide and celastrol comprising the steps of:

(a) preparing a cellular inoculum from *Tripteryguim wilfordii* Hook F;

(b) inoculating a nutrient growth medium with the cellular inoculum and incubating the inoculated growth medium at 20°–30° C. for up to 8 weeks to produce a cellular product at a pH below 7;

(c) harvesting the cellular product from the inoculated growth medium; and

(d) isolating tripdiolide, triptolide and celastrol from the cellular product and supernatant inoculated growth medium.

4,328,310

SEMI-CONTINUOUS METHOD FOR PRODUCTION OF XANTHAN GUM USING *XANTHOMONAS CAMPESTRIS* ATCC 31601

William P. Weisrock, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 168,969, Jul. 14, 1980, abandoned. This application Apr. 16, 1981, Ser. No. 254,696

Int. Cl.³ C12P 19/06

U.S. Cl. 435—104 7 Claims

1. A method for the production of xanthan gum which comprises introducing a culture of *Xanthomonas campestris* XCP-19 having the identifying characteristics of ATCC 31601, into a fermentation zone containing a nutrient medium to produce both bacterial cell growth and xanthan gum, withdrawing a portion of the fermented medium from said zone, recovering xanthan gum from said portion, thereafter adding a fresh sterile volume of said medium to the residual liquid in said zone and repeating the above cycle.

4,328,311

ENZYME-AMINOGLYCOSIDE CONJUGATES

Gerald L. Rowley, San Jose; Danton Leung, Campbell, and Prithipal Singh, Santa Clara, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Division of Ser. No. 876,772, Feb. 10, 1978, Pat. No. 4,220,722. This application Feb. 28, 1980, Ser. No. 125,713

Int. Cl.³ C12N 9/96

U.S. Cl. 435—188 17 Claims

1. A dehydrogenase enzyme-aminoglycoside conjugate.

4,328,312

PROCESS FOR PRODUCTION OF PEROXIDASE

Yoshihiro Tsurumi, Tokyo; Tomio Fujioka, Matsudo; Toshio Matsuzaki, and Hidechika Wakabayashi, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 10, 1980, Ser. No. 138,978

Claims priority, application Japan, Apr. 11, 1979, 54/43864; Jan. 24, 1980, 55/7207

Int. Cl.³ C12N 9/08

U.S. Cl. 435—192 15 Claims

1. A process for producing a peroxidase, which comprises culturing a microorganism belonging to the genus Myrothecium and capable of producing a peroxidase in a nutrient medium, accumulating in the cultured product the peroxidase and collecting the accumulated peroxidase.

4,328,313

METHOD OF PRODUCING A PLAQUE DISPERSING ENZYME

Lloyd G. Simonson, Waukegan, and Burton L. Lamberts, Libertyville, both of Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 105,315, Dec. 19, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,595

Int. Cl.³ C12N 9/24

U.S. Cl. 435—200 5 Claims

1. A method for producing a plaque-dispersing α-1, 3-glucan 3-glucanohydrolase (1,3-glucanase) enzyme which comprises cultivating a bacterial culture of the strain Pseudomonas NRRL B-12324 in an aqueous medium containing a "limit glucan" substrate which is greater than 90 percent α-1, 3-glycosidically linked, then allowing growth until the medium contains an accumulation of 1,3-glucanase and then recovering said enzyme.

4,328,314

PROCESS FOR PRODUCING PLASMINOGEN ACTIVATOR

Sadayuki Horiguchi; Akio Hasegawa, and Hajimu Sakamoto, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1979, Ser. No. 97,284

Claims priority, application Japan, Nov. 24, 1978, 53-144234

Int. Cl.³ C12N 9/48

U.S. Cl. 435—212 9 Claims

1. In a process for producing plasminogen activator which comprises contacting animal cells having the ability to produce plasminogen actovator with an aqueous nutrient solution, the improvement wherein said aqueous nutrient solution contains 1 to 120 millimoles per liter of aqueous nutrient of an organic acid selected from the group consisting of fumaric acid, malic acid, succinic acid and glycolic acid.

4,328,315

MYCOBACTERIUM FORTUITUM STRAIN

Merle G. Wovcha; Candice B. Biggs, both of Kalamazoo, and Thomas R. Pyke, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 849,526, Nov. 9, 1977, Pat. No. 4,293,645, and a continuation-in-part of Ser. No. 662,563, Mar. 1, 1976, abandoned. This application Sep. 8, 1980, Ser. No. 184,700

Int. Cl.³ C12N 1/20

U.S. Cl. 435—253 1 Claim

1. A biologically pure culture of mutant *Mycobacterium fortuitum* NRRL B-8153.

4,328,316

BIOLOGICALLY PURE CULTURE OF ACTINOPLANES CAPABLE OF PRODUCING ANTIBIOTIC A/16686

Bruno Cavalleri; Hermes Pagani, and Giancarlo Volpe, all of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Division of Ser. No. 135,560, Mar. 31, 1980, Pat. No. 4,303,646. This application Dec. 11, 1980, Ser. No. 215,310

Claims priority, application United Kingdom, Apr. 7, 1979, 122298/79

Int. Cl.³ C12N 1/20; C12P 21/00; C12R 1/045

U.S. Cl. 435—253 2 Claims

1. A biologically pure culture of Actinoplanes sp. ATCC 33076 and a nutrient medium consisting of an assimilable source of each of carbon, nitrogen, and essential mineral salts, said culture being capable of producing antibiotic A/16686 in a recoverable quantity upon fermentation.

4,328,317

CONTINUOUS CHEMICAL CONVERSION OR FERMENTATION APPARATUS

Robert C. Prentice, Terril, and Dale W. Mastarone, Spencer, both of Iowa, assignors to Solargizer International, Inc., Bloomington, Minn.

Filed Mar. 31, 1980, Ser. No. 136,053

Int. Cl.³ C12M 1/14

U.S. Cl. 435—310 9 Claims

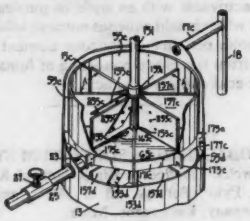
1. An apparatus for the continuous conversion of a continuously-supplied convertible feedstock comprising:

(a) a generally vertically disposed conversion tower defining a generally vertically extending space containing a plurality of vertically arranged, tray-like conversion zones for the temporary retention, continuous receiving, and continuous gravity discharge of a convertible feedstock, each said conversion zone being defined by a generally horizontal floor having (1) a drain opening therein for the continuous discharge by gravity of partially converted convertible feedstock to the conversion zone disposed therebelow and (2) a generally upwardly extending wall for retaining said convertible feedstock therewithin, each said conversion zone being divided into substantially liquid-tight, continuously movable segments by movable

partitions for advancing the convertible feedstock in said conversion zone toward said drain opening at a controlled rate,

(b) a collection means, disposed beneath a said drain opening in a said conversion zone, for continuously collecting a portion of the partially converted convertible feedstock discharged through said drain opening,

(c) a feedstock conveying means, communicating with the vertically extending space defined by said tower, for continuously conveying convertible feedstock to a said conversion zone,



(d) a partially converted feedstock recirculation means for continuously circulating partially converted convertible feedstock collected by said collection means to a said conversion zone, whereby the convertible feedstock conveyed to the said conversion zone continuously includes both fresh convertible feedstock and partially converted convertible feedstock, and

(e) withdrawing means, communicating with the lower end of said vertically extending space, for continuously withdrawing products from said lower end of said vertically extending space.

4,328,318

GLASSES CONTAINING FLUORINE, THEIR PREPARATION AND THEIR APPLICATION

Jean-Pierre Miranday, Le Mans; Charles Jacoboni, Sainte Jamme, and Robert de Pape, Le Mans, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Paris, France

Filed Mar. 20, 1980, Ser. No. 132,169

Claims priority, application France, Mar. 28, 1979, 79 07785

Int. Cl.³ C03C *3/12*

U.S. Cl. 501—40 **23 Claims**

1. Glasses containing fluorine characterized by the fact that they contain

(1) at least 25% of a fluoride or a mixture of fluorides having the formula $MX(X_1)_2$ as a network former in which

(a) X and X_1 each represent a fluorine atom and M represents a metal chosen from the group consisting of gallium, iron, chromium, vanadium, indium, and the rare earths, or

(b) X represents an oxygen atom, X_1 represents a fluorine atom, and M represents a titanium atom, said glasses being devoid of hydrofluoric acid and

(2) at least one fluoride having the formula $M_{II}F_2$, M_{II} being a devalent metal chosen from the group consisting of lead, barium, calcium, cadmium, and strontium, said at least one fluoride being present in an amount up to 75% in moles, said glasses containing no more than 5% in moles of alkaline-earth fluorophosphates and no more than 10% in moles of ZrF_4 and/or HfF_4.

4,328,319

PROCESS FOR PREPARING PROPELLANT COMPOSITIONS FORMING FOAMED STRUCTURES CONTAINING OPEN AND/OR CLOSED CELLS

Lloyd I. Osipow, New York, N.Y., and J. George Spitzer, Palm Beach, Fla., assignors to Restech Research Limited Partnership, New York, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,665

Int. Cl.³ C08J *9/12, 9/26, 9/30*

U.S. Cl. 521—78 **36 Claims**

1. A process for preparing propellant compositions including a film-forming synthetic polymer that are capable of forming foamed structures containing open and/or closed cells which comprises coating the synthetic polymer in particulate form with an inert solid material insoluble in the propellant and in solutions of the synthetic resin in the propellant at atmospheric temperature; and then adding the propellant and dissolving the synthetic polymer in the propellant, thereby forming a synthetic polymer-propellant composition in situ.

4,328,320

THERMOPLASTIC CONSTRUCTIONAL-AND-INSULATING MATERIAL

Waldemar B. Reszniak, and Larisa Smirnowa, both of ul.Kolobrzeska 23/50, Olsztyn, Poland

Filed May 12, 1980, Ser. No. 148,673

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—84 **1 Claim**

1. A thermoplastic construction-insulating building material comprising from about 50 to 80% by weight of fly-ashes, from about 10 to 30% by weight of a porous material selected from the group consisting of sawdust and wood chips having a moisture content of about 50%, and as a binder, from about 8 to 40% of polypropylene.

4,328,321

DIALKOXY-PHOSPHONYL-N-ALKYL-FORMIC ACID AMIDES AND THEIR USE AS ADDITIVES FOR THE PRODUCTION OF POLYURETHANE FOAMS WHICH ARE CAPABLE OF BEING FLAME LAMINATED AND HIGH FREQUENCY WELDED

Peter Haas, Haan; Heinz Müller, Leverkusen; Peter Seifert, Bergisch Gladbach; Kuno Wagner, Leverkusen; Kurt Findeisen, Odenthal, and Klaus König, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 185,870

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1979, 2937509

Int. Cl.³ C08G *18/14*

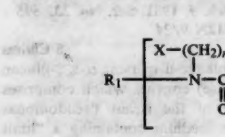
U.S. Cl. 521—108 **6 Claims**

1. A process for the preparation of polyurethane foams capable of being flame laminated and high frequency welded, comprising reacting:

(a) polyisocyanate and,

(b) a compound having a molecular weight of from 400 to 10,000 containing at least two isocyanate-reactive hydrogen atoms in the presence of

(c) a dialkoxy-phosphonyl-N-alkyl-formic acid amide of the formula:



wherein

m represents an integer of from 1 to 3,

n represents an integer of from 0 to 8,

X represents halogen, hydrogen, C_1 to C_6 alkyl, —OR, or

R represents C_1 to C_6 alkyl,

R_1 represents hydrogen, C_1 to C_{10} alkyl, C_1 to C_{10} alkylene, C_6 to C_{10} aryl, or C_5 to C_{10} arylene, and

R_2 and R_3, which may be the same or different, represent C_1 to C_{10} alkyl in the presence of water and/or blowing agent.

4,328,322

SYNTHETIC POLYMERS BY POLYISOCYANATE POLYADDITION PROCESS

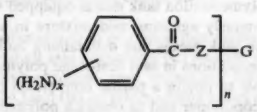
Richard C. Baron, Tewksbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 99,857, Dec. 3, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,149

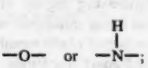
Int. Cl.³ C08G *18/32*

U.S. Cl. 521—163 **72 Claims**

1. A synthetic polymer substantially free of the reaction product of an isocyanate and a polyalkylene ether glycol or polyol and substantially free of salts formed during production of the polymer by reaction of a basic material and an amine salt and comprising the reaction product of a polyisocyanate and substantially an equivalent amount of an oligomeric aminobenzoic acid ester or amide having the formula



wherein n is an integer from 2 to 4; each x is one or two; each benzoyl nucleus is para-, meta- or di-metaamino-substituted; each Z is



and G is an n- valent radical obtained by removal of hydroxy groups or amino groups from an n-valent polyol or polyamine having a molecular weight of from about 400 to about 6,000.

4,328,323

PRODUCTION OF SILANE MODIFIED COPOLYMERS OF ALKYLENE-ALKYL ACRYLATES

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 70,785, Aug. 29, 1979, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Sep. 30, 1980, Ser. No. 192,319

Int. Cl.³ C08G *81/02*; C08F *8/00*

U.S. Cl. 525—106 **30 Claims**

1. Process of producing a water-curable, silane modified alkylene-alkyl acrylate copolymer which comprises reacting a mixture containing an alkylene-alkyl acrylate copolymer, a polysiloxane having the repeating unit:

wherein R is a hydrocarbon radical, or oxy substituted hydrocarbon radical each V is hydrogen, a hydrocarbon radical or a hydrolyzable group and Z is a hydrolyzable group, n is an integer having a value of 1 to 18 inclusive, x is an integer having a value of at least 2 and an organic titanate.

4,328,324

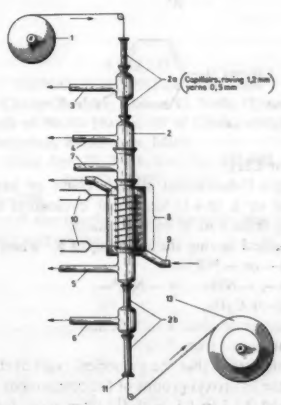
PROCESS FOR THE TREATMENT OF AROMATIC POLYAMIDE FIBERS, WHICH ARE SUITABLE FOR USE IN CONSTRUCTION MATERIALS AND RUBBERS, AS WELL AS SO TREATED FIBERS AND SHAPED ARTICLES REINFORCED WITH THESE FIBERS

Theodorus J. J. M. Kock, Rotterdam, and Jacobus J. G. Smits, Waddinxveen, both of Netherlands, assignors to Nederlandse Organisatie voor Tiegeoast- Natyyrwetebscgaooekuhj Ibderziej ten behoeve van Nijverheid Handel en Verkeer, The Hauge, Netherlands

Filed Jun. 12, 1979, Ser. No. 47,882

Int. Cl.³ B29H *9/02*; C08F *2/52*; B60C *9/00*

U.S. Cl. 525—423 **2 Claims**



1. Aromatic polyamide fiber treated by drawing polyamide fibers through at least one capillary entrance and outlet through a tube wherein a reduced pressure is maintained and wherein a plasma is generated by means of a high frequency field caused by a solenoid placed around said area.

2. Shaped article made of a plastic or rubber matrix material containing a fiber of claim 1 as a reinforcing agent.

4,328,325

PROCESS FOR THE PREPARATION OF POLYMERS CONTAINING URETHANE GROUPS

Klaus Marquardt, and Hubert Wiest, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,544

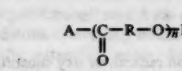
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914984

Int. Cl.³ C08F *216/12*, *220/36*, *220/60*, *283/00*

U.S. Cl. 525—451 **40 Claims**

1. A process for the preparation of polymers from polymerizable urethanes containing unsaturated groups and from ole-

finically unsaturated compounds, which comprises polymerizing (i) from about 40 to 100 percent by weight of urethanes prepared by reacting polyisocyanatoalkyl and/or polyisocyanatoaryl compounds with compounds of the formula

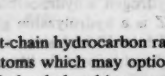


(I)

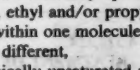
wherein

R=straight-chain hydrocarbon radicals having from 2 to 10 carbon atoms which may optionally be substituted by up to 5 methyl, ethyl and/or propyl groups, wherein all the radicals R within one molecule of the Formula I may be the same or different,

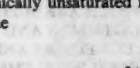
A=an ethylenically unsaturated radical of one of the general formulae



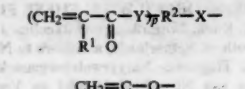
(II)



(III)



(IV)



(V)

wherein

R^1=H or CH_3,

R^2=a (p+1)-functional straight-chain or branched alkyl radical or a (p+1)-functional cycloalkyl radical, each having from 1 to 20 carbon atoms,

R^3=a radical having the meaning of R^2 when p=1,

X=—O— or —NR^4—,

Y=—O—, —NH—, or —NR^4—,

R^4=CH_3 or C_2H_5,

n=an integer of from 1 to 100, and

p=an integer of from 1 to 3,

in such molar ratios that the numerical ratio of the isocyanato groups to the hydroxyl groups of the compounds of Formula I is from about 0.2:1 to 1:1, with (ii) from about 0 to 60 percent by weight of olefinically unsaturated compounds, by means of radical polymerization, in the presence of initiators.

4,328,326

MELAMINE RESINS: PROCESS FOR THEIR MANUFACTURE AND THE COMPRESSION MOULDING COMPOSITIONS PRODUCED FROM THE MELAMINE RESINS

Steffen Piesch, Oberursel, and Alfons Wolf, Seligenstadt, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

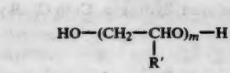
Division of Ser. No. 42,976, May 29, 1979, Pat. No. 4,303,561. This application Jan. 9, 1981, Ser. No. 223,932

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824473

Int. Cl.³ C08G 8/36, 61/32

U.S. Cl. 525—509 **2 Claims**

1. Partially etherified melamine-formaldehyde resin having a melamine:formaldehyde molar ratio of 1:(1.25 to 1) and containing relative to its solids content, a cross-linking amount but no more than 5% by weight of a glycol of the formula



wherein R' is —CH_3 or —CH_2OH and m denotes an integer from 1 to 4.

4,328,327

CONTINUOUS BULK POLYMERIZATION PROCESS FOR PREPARING COPOLYMER OF AROMATIC VINYL MONOMER AND MALEIC ANHYDRIDE

Atsushi Tanaka, Himeji; Toshiyuki Chiba, Sakai, and Hirotaka Miyata, Himeji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 14, 1980, Ser. No. 196,705

Claims priority, application Japan, Oct. 15, 1979, 54/132553

Int. Cl.³ C08F 220/08

U.S. Cl. 526—66 **9 Claims**

1. A continuous bulk polymerization process for preparing a substantially uniform copolymer consisting essentially of from 60 to 95% by weight of units of aromatic vinyl monomer, from 40 to 5% by weight of units of maleic anhydride monomer and from 0 to 30 wt. % of units of third copolymerization monomer which is different from said aromatic vinyl monomer and said maleic anhydride monomer, which comprises the steps of continuously feeding a mixture of said monomers having a composition effective to form said copolymer into a vertical, first-stage, polymerization tank means equipped with agitating means, continuously agitating said mixture in said first-stage polymerization tank means and maintaining bulk polymerization reaction conditions in said first-stage polymerization tank means effective to obtain a partial conversion of said monomers to said copolymer and to obtain a polymerization liquid containing from 30 to 60 wt. % of solids of said copolymer; continuously withdrawing said polymerization liquid from said first-stage polymerization tank means and feeding it into one horizontal end of an elongated, horizontal, second-stage apparatus effective for processing highly viscous materials, said second-stage apparatus being equipped with horizontal rotary shaft means having a series of blade members mounted thereon at horizontally spaced-apart locations and extending outwardly therefrom so as to divide said second-stage apparatus into a series of horizontally displaced mixing zones, continuously rotating said shaft means and thereby continuously mixing said polymerization liquid in said mixing zones while moving said polymerization liquid from one mixing zone to the next so that said polymerization liquid moves to the opposite horizontal end of said second-stage apparatus, maintaining bulk polymerization reaction conditions in said second-stage apparatus effective to obtain a further conversion of said monomers to said copolymer as said polymerization liquid moves toward said opposite horizontal end of said second-stage apparatus to obtain a polymerization reaction product containing from 60 to 95 wt. % of solids of said copolymer, and continuously, separately adding divided quantities of maleic anhydride monomer to said polymerization liquid at a plurality of horizontally spaced-apart locations in said second-stage apparatus wherein the amount of maleic anhydride monomer added at said locations progressively diminishes toward said opposite horizontal end of said second-stage apparatus so as to continuously obtain a uniform copolymer containing a substantially constant amount of maleic anhydride.

4,328,328

CONTINUOUS PROCESS FOR PRODUCTION OF OLEFIN POLYMERS OR COPOLYMERS

Syuji Minami; Takashi Ueda; Mamoru Kioka, all of Ohtake, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Dec. 4, 1979, Ser. No. 100,098

Claims priority, application Japan, Dec. 11, 1978, 53/151998

Int. Cl.³ C08F *4/64, 10/02*

U.S. Cl. 526—125 9 Claims

1. In a process for producing a polymer or copolymer of an alpha-olefin which comprises continuously polymerizing ethylene or copolymerizing ethylene with an alpha-olefin having from 3 to 12 carbon atoms with from 0 to 5 mole % of a diolefin at a temperature in the range of from about 20° C. to about 350° C. and at a pressure in the range of from about atmospheric pressure to about 100 kg/cm²·G in a hydrocarbon solvent in the presence of a catalyst comprising a transition metal compound and an organoaluminum compound, the improvement comprising

[I] carrying out polymerization or copolymerization in the presence of a catalyst composed of

(A) a magnesium compound in the liquid state which is soluble in said hydrocarbon solvent and is free from an organoaluminum compound and a transition metal compound, said magnesium compound being obtained by reacting (i) at least one electron donor selected from the group consisting of alcohols having not less than 6 carbon atoms, organocarboxylic acids having not less than 7 carbon atoms, aldehydes having not less than 7 carbon atoms and amines having not less than 6 carbon atoms with (ii) a halogen-containing magnesium compound,

(B) a transition metal compound of titanium or vanadium in the liquid state, and

(C) an organoaluminum compound,

wherein

[II] said polymerization or copolymerization is carried out while feeding said compound (C) into the polymerization or copolymerization zone separately from other compounds (A) and (B), or while adding a part or the whole of said compound (C) to a liquid mixture of said other compounds (A) and (B) and feeding the resulting mixture into said zone; and,

wherein

[III] the mole ratio of the transition metal compound to the halogen-containing magnesium compound is from 0.005 to about 0.5.

4,328,329

PROCESS FOR POLYMERIZING METHYL METHACRYLATE SYRUP USING A DUAL INITIATOR SYSTEM

Ernest R. Novak, Vienna, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 11, 1980, Ser. No. 215,450

Int. Cl.³ C08F *4/04, 20/14*

U.S. Cl. 526—218 3 Claims

1. A process for preparing a methyl methacrylate homopolymer and copolymers of methyl methacrylate with α,β-ethylenically unsaturated compounds which process comprises polymerizing a syrup containing 10-40% by weight of said methyl methacrylate homopolymer or copolymer in monomeric methyl methacrylate, wherein the improvement comprises carrying out said polymerization in the presence of a mixture of polymerization initiators, consisting of between about 0.3–12 moles tertiary C_4- or tertiary C_5-peroxyneodecanoate and between about 0.1–4 2,2'-azobis-(isobutyronitrile) per 1 million grams of syrup.

4,328,330

PROCESS FOR THE PRODUCTION OF POLYUREAS

Wolfgang Wellner, Cologne; Artur Botta, Krefeld, and Hermann Gruber, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

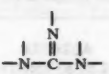
Filed May 4, 1981, Ser. No. 260,542

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3018023

Int. Cl.³ C08G *18/16*

U.S. Cl. 528—45 6 Claims

1. A process for the production of polyureas by reacting organic polyisocyanates containing blocked isocyanate groups with organic compounds containing at least two primary and/or secondary amino groups in the presence of catalysts which accelerate the condensation reaction of the above-mentioned starting materials, characterized in that compounds containing at least one guanidine group corresponding to the formula:



are used as catalysts.

4,328,331

NOVEL POLYESTER-AMIDES

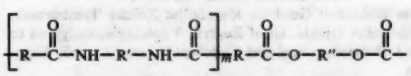
Augustin T. Chen, Cheshire; Robert G. Nelb, II, and Kemal B. Onder, both of North Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 20, 1981, Ser. No. 255,632

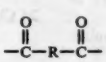
Int. Cl.³ C08G *63/44*

U.S. Cl. 528—288 12 Claims

1. Segmented thermoplastic polyester-amides characterized by a recurring unit of the formula:



wherein



is the residue of a dicarboxylic acid selected from the class consisting of arylene dicarboxylic acids, alkylene dicarboxylic acids and arylenebis(alkanoic acids);

from 50 to 100 percent of the R's group in said recurring unit represent the residue of a diamine having the formula:

$$H_2N—C_nH_{2n}O—R'''—O—C_{n'}H_{2n'}—NH_2$$

wherein C_nH_{2n} and $C_{n'}H_{2n'}$ are each independently alkylene from 3 to 5 carbon atoms and R''' is alkylene having from 1 to 6 carbon atoms separating the valencies;

and from 50 to 0 percent of the R' groups in said recurring unit represent the residue of at least one aliphatic diamine having from 2 to 12 carbon atoms;

R'' is the residue of a polymeric diol HO—R''—OH having a molecular weight from about 400 to about 4000;

and m is a number having an average value from about 1 to about 20.

4,328,332

PROCESS FOR PRODUCING FLUORESCENT RESIN FOR INK JET PRINTERS

Larry J. Hayes, Roanoke, and Keith L. Reddick, Dallas, both of Tex., assignors to Recognition Equipment Inc., Irving, Tex.

Filed Jun. 14, 1981, Ser. No. 273,169
Int. Cl.³ C08G 63/12
U.S. Cl. 528—296 8 Claims

1. A process for making a polyester resin comprising the steps of: blending a mixture of trimellitic anhydride, a glycol chosen from either 1,3-propanediol or 2,2-dimethyl-1,3-propanediol or a mixture thereof and zinc acetate in a resin kettle, while blending the mixture raise the kettle temperature to about 150° C., maintain the kettle temperature for at least 30 minutes to permit melting and formation of a homogeneous mixture, increase the kettle temperature to about 180° C. and maintain the temperature until distillation of the water amounts to 0.03 to 0.04 of the charge and then immediately remove mixture and cool to room temperature.

4,328,333

COPOLYESTERETHERS

Robert B. Barbee, and Burns Davis, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,449
Int. Cl.³ C08G 63/66
U.S. Cl. 528—301 9 Claims

1. A copolyesterether comprising

A. a dicarboxylic acid component consisting essentially of about 50–92.5 mole % terephthalic acid and about 50–7.5 mole % of another aliphatic or cycloaliphatic dicarboxylic acid having from 2 to 40 carbon atoms, and

B. (1) a diol component comprising at least 70 mole % 1,4-butanediol and

C. (2) from about 10 to about 60% based on the weight of the copolyesterether, of a polypropylene ether glycol having a molecular weight of about 1700–2400.

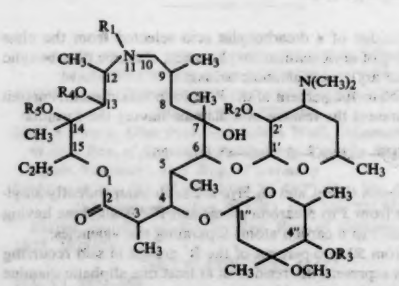
4,328,334

11-AZA-10-DEOXO-10-DIHYDROERYTHROMYCIN A AND DERIVATIVES THEREOF AS WELL AS A PROCESS FOR THEIR PREPARATION

Gabrijela Kobrehel; Gordana Radobolja; Zrinka Tamburasev, and Slobodan Djokic, all of Zagreb, Yugoslavia, assignors to PLIVA Pharmaceutical and Chemical Works, Zagreb, Yugoslavia

Filed Mar. 28, 1980, Ser. No. 134,816
Claims priority, application Yugoslavia, Apr. 2, 1979, 768/79
Int. Cl.³ A61K 31/71; C07H 17/08
U.S. Cl. 536—7.4 24 Claims

1. Compound having the structural formula:



(I)

wherein R_1 represents hydrogen, lowr alkanoyl or 4—R—C_6H_4—SO_2—, wherein R represents an alkyl, and each R_2, R_3, R_4 and R_5 individually represents hydrogen or lower alkanoyl or R_4 and R_5 together are >C=O.

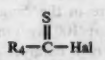
4,328,335

PROCESS FOR THE INTERCONVERSION OF C-076 COMPOUNDS

Helmut H. Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 66,255, Aug. 13, 1979. This application Dec. 15, 1980, Ser. No. 216,479
Int. Cl.³ C07H 17/08
U.S. Cl. 536—7.1 7 Claims

1. A process for converting C-076 A2a/A2b and C-076 B2a/B2b compounds into C-076 A1a/A1b and C-076 B1a/B1b compounds respectively, which comprises reacting a suitably protected C-076 A2a/A2b or C-076 B2a/B2b compound with a substituted thiocarbonyl halide having the formula:



wherein Hal is a halogen selected from fluorine, chlorine, bromine or iodine, and R_4 is phenyl; substituted phenoxy wherein the substituents are loweralkyl; or disubstituted amino wherein the substituents are loweralkyl, in the presence of a tertiary amine, to produce the 23-O-(substituted thiocarbonyl) compound which is pyrolyzed by heating neat or in a high boiling solvent at from 150° to 250° C. to eliminate the 23-O-(substituted thiocarbonyl) group and introduce the 22,23-unsaturation; and said C-076 A1a/A1b and C-076 B1a/B1b compounds are prepared by removing any such protecting groups.

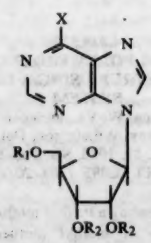
4,328,336

9-(β-D-RIBOFURANDSYL)PURINE-6-CARBOXAMIDE AND RELATED COMPOUNDS

Roland K. Robins, Provo, Utah, and Robert J. Rousseau, Laguna Niguel, Calif., assignors to ICN Pharmaceuticals, Inc., Covina, Calif.

Filed Aug. 26, 1980, Ser. No. 181,635
Int. Cl.³ C07H 19/20, 19/18, 19/16
U.S. Cl. 536—28 7 Claims

1. A compound of the structure:



wherein X is

R is O or S, R_1 is H, Ac or $PH(OH)_2$, R_2 is H or Ac and Ac is C_1–C_{18} acyl.

4,328,337

HIGH POLYMERIC COMPOUNDS HAVING SACCHARIDE SIDE CHAINS

Takao Kawasaki, Sayama; Yoshiaki Osaka, Nagareyama; Yukiharu Yamaguchi, Hino, and Saichi Ono, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

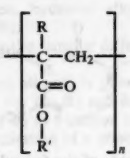
Filed Dec. 20, 1979, Ser. No. 105,653

Claims priority, application Japan, Dec. 29, 1978, 53-161387

Int. Cl.³ C07H *13/02, 11/00*

U.S. Cl. 536—119 **1 Claim**

1. A high polymeric substance having saccharide side chains represented by the formula



wherein R represents a hydrogen atom or a methyl group and R′ represents a residue of a saccharide selected from the group consisting of glucose, fructose, maltose, mannose, lactose and cellobiose, which is acyl-bonded at its 1-position, and n is an integer of 10 to 1000.

4,328,338

2,5-INTER-O-PHENYLENE-3,4-DINOR-6,9α-EPOXY-6β-PGF$_1$ AMIDES

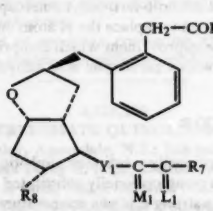
Udo F. Axen, Plainwell, and John C. Sih, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 62,443, Jul. 31, 1979, Pat. No. 4,312,810, which is a continuation-in-part of Ser. No. 962,845, Nov. 22, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,838

Int. Cl.³ C07D *307/935*

U.S. Cl. 542—426 **1 Claim**

1. A prostacyclin analog of formula VI



wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;

wherein Y_1 is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —CH_2CH_2, or

(4) —C≡C—,

wherein M_1 is α-R_5:β-OH or α-OH:βR_5, wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive,

wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and α-R_4:β-R_3, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_7 is

(1) —$(CH_2)_m$—CH_3, wherein m is an integer from one to 5, inclusive;

(2) phenoxy;

(3) phenoxy substituted by one, 2 or 3 chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(4) phenyl;

(5) phenyl substituted by one, 2 or 3 chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(6) phenylmethyl, phenylethyl, or phenylpropyl; or

(7) phenylmethyl, phenylethyl, or phenylpropyl substituted by one, 2 or 3 chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein L_4 is

(1) amino of the formula —$NR_{21}R_{22}$, wherein R_{21} and R_{22} are

(a) hydrogen;

(b) alkyl of one to 12 carbon atoms, inclusive;

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive;

(d) aralkyl of 7 to 12 carbon atoms, inclusive;

(e) phenyl;

(f) phenyl substituted with one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbn atoms, inclusive, or nitro;

(g) carboxyalkyl of 2 to 5 carbon atoms, inclusive;

(h) carbamoylalkyl of 2 to 5 carbon atoms, inclusive;

(i) cyanoalkyl of 2 to 5 carbon atoms, inclusive;

(j) acetylalkyl of 3 to 6 carbon atoms, inclusive;

(k) benzoylalkyl of 7 to 11 carbon atoms, inclusive;

(l) benzoylalkyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;

(m) pyridyl;

(n) pyridyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;

(o) pyridylalkyl of 6 to 9 carbon atoms, inclusive;

(p) pyridylalkyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy or alkoxy of one to 3 carbon atoms, inclusive;

(q) hydroxyalkyl of one to 4 carbon atoms, inclusive;

(r) dihydroxyalkyl of one to 4 carbon atoms; or

(s) trihydroxyalkyl of one to 4 carbon atoms; with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(2) cycloamino selected from the group consisting of

(a) pyrrolidino,

(b) piperidino,

(c) morpholino,

(d) piperazino,

(e) hexamethyleneimino,

(f) pyrrolino,

(g) 3,4-didehydropiperidinyl, or

(h) pyrrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-didehydropiperidinyl substituted by one or 2 alkyl of one to 12 carbon atoms, inclusive;

(3) carbonylamino of the formula —$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and R_{21} is other than hydrogen, but otherwise as defined above; or

(4) sulfonylamino of the formula —$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined in (3).

4,328,339
CONTINUOUS PREPARATION OF ISATOIC ANHYDRIDE

Gerhard Kilpper, Battenberg; Johannes Grimmer, Ludwigshafen; Peter Tonne, Neustadt; Hans C. Horn, Lambsheim, and Eckhard Hetzel, Bobenheim-Poxhe, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 108,580, Dec. 31, 1979, abandoned.
This application Nov. 24, 1980, Ser. No. 209,960
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902978
Int. Cl.³ C07D *265/26*
U.S. Cl. 544—94 13 Claims

1. A process for the continuous preparation of unsubstituted or substituted isatoic anhydride by reacting an alkali metal phthalamate and/or an alkali metal phthalimidate with a hypohalite in an aqueous medium, which comprises:

(a) dissolving an unsubstituted or substituted phthalimide and/or phthalamic acid in aqueous alkali metal hydroxide solution, using a ratio of from 1 to 1.1 moles of alkali metal hydroxide per mole of phthalimide and/or per mole of phthalamic acid,

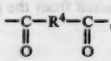
(b) mixing the resulting aqueous solution of alkali metal phthalamate and/or alkali metal phthalimidate with an aqueous solution of an alkali metal hypohalite in a mixing apparatus,

(c) reacting the resulting mixture in the first part of a reaction tube, at a high flow rate, under substantially adiabatic conditions at from 5° to 50° C. for 0.1 to 3.5 seconds, in the presence of bromine, iodine and/or an amide of the formula

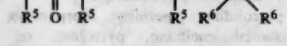
I

where R^1 is a sulfonic acid group, a sulfonate radical or a sulfonamide group, R^2 is hydrogen, an aliphatic radical, chlorine or bromine, X is chlorine, bromine or hydrogen, R^1 and R^2 may also together with the adjacent nitrogen, be members of heterocyclic radical which contains one or more sulfone groups, or phosphonyl groups of the formula

where R^3 is hydrogen or an alkali metal atom, the said groups being adjacent to the nitrogen, and R^1 and R^2 together may also be



where R^4 is alkylene,



where R^5 is hydrogen, chlorine or bromine and R^6 is an aliphatic radical,

(d) adding an acid to the reaction mixture issuing at a high flow rate from the first part of the reaction tube, and completing the reaction in the second part of said tube at a pH of from 5 to 8 and at from 10° to 60° C. and

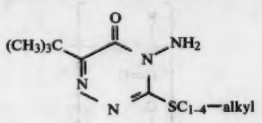
(e) isolating the end product from the issuing reaction mixture.

4,328,340
PREPARATION OF 4-AMINO-6-TERT.-BUTYL-3-ALKYLTHIO-1,2,4-TRIAZIN-5-(4H)-ONES

Gerhard Bonse, Cologne; Heinz U. Blank, Odenthal, and Hans Krätzer, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 19, 1981, Ser. No. 235,496
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009043
Int. Cl.³ C07D *253/06*
U.S. Cl. 544—182 20 Claims

1. In the preparation of 4-amino-6-tert.-butyl-3-alkylthio-1,2,4-triazin-5-(4H)-one of the formula



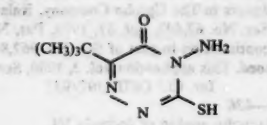
wherein pivaloyl cyanide of the formula

$$(CH_3)_3C—CO—CN$$

is reacted to form an intermediate, the intermediate is condensed with thiocarbohydrazide of the formula

$$NH_2—NH—CS—NH—NH_2$$

to form 4-amino-6-tert.-butyl-3-mercapto-1,2,4-triazin-5(4H)-one of the formula



and the 4-amino-6-tert.-butyl-3mercapto-1,2,4-triazin-5(4H)-one is alkylated to replace the H atom on the sulphur by $—C_{1-4}—$ alkyl, the improvement which comprises reacting the pivaloyl cyanide with a carboxylic acid anhydride of the formula

$$R\text{-}CO—O—CO\text{-}R$$

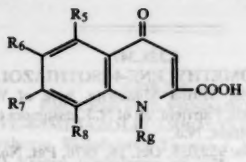
in which R is an optionally substituted aliphatic radical with up to 8 carbon atoms or an optionally substituted phenyl radical, in the presence of a strong acid at a temperature between about −50° and +150° C., and then directly reacting the reaction mixture thus obtained with the thiocarbahydrazide.

4,328,341
PROCESS FOR PREPARING CERTAIN PYRANO[3,2-G]QUINOLINE 2,8-DICARBOXYLATES AND 4-OXO-QUINOLINE-2-CARBOXYLATES

Richard A. Raphael; Stephen C. Eyley, and Stephen C. W. Coltman, all of Loughborough, England, assignors to Fisons Limited, London, England

Filed Dec. 2, 1980, Ser. No. 212,331
Claims priority, application United Kingdom, Dec. 7, 1979, 42248/79
Int. Cl.³ C07D *491/12, 215/56*
U.S. Cl. 546—92 8 Claims

1. A process for the production of a compound of formula II,



II

or a pharmaceutically acceptable salt thereof,

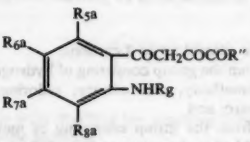
in which an adjacent pair of R_5, R_6, R_7 and R_8 form a chain —COCH=C(COOH)—O—, and the remainder of R_5, R_6, R_7 and R_8, which may be the same or different, each represent hydrogen, hydroxy, alkyl, halogen, alkenyl, alkoxy, or $—NR_1R_2$,

R_1 and R_2, which are the same or different, are each hydrogen or alkyl, and

Rg is hydrogen, alkyl, alkenyl or phenyl-alkyl,

each of Rg, R_1, R_2, R_5, R_6, R_7 and R_8, when they contain carbon, containing up to 8 carbon atoms,

which comprises cyclisation of a compound of formula III,



III

in which

R_{5a}, R_{6a}, R_{7a} and R_{8a} have the same significances as R_5, R_6, R_7 and R_8 above, save that an adjacent pair of R_{5a}, R_{6a}, R_{7a} and R_{8a}, may together either represent the chain —COCH=(COOH)—O— or a lower alkyl ester thereof, or the pairs of groups $—COCH_2COCOR''$; and —0M or a halogen atom,

R'' represents —OM or a group which is hydrolysable thereto,

M represents hydrogen or an alkali metal, and

Rg is as defined above,

and if desired or necessary converting the resulting compound to a pharmaceutically acceptable salt thereof.

4,328,342
INTERMEDIATE QUINOLIN-4-ONES

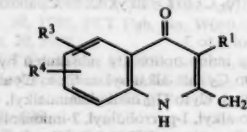
Richard A. Conley, Annandale, N.J.; Margaret M. Lam, New York, N.Y., and Leroy B. High, Cranbury, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 171,579, Jul. 23, 1980, which is a division of Ser. No. 56,660, Jul. 11, 1979, Pat. No. 4,252,945. This application Apr. 24, 1981, Ser. No. 257,436

Int. Cl.³ C07D *215/22*

U.S. Cl. 546—153 **3 Claims**

1. An intermediate of the structure



wherein R^1 is hydrogen, lower alkyl, hydroxymethyl, phenyl-lower alkyl, phenyl or phenyl substituted with halogen, lower alkyl, lower alkoxy, or trifluoromethyl;

R^2 is lower alkoxy, phenyl-lower alkoxy, phenoxy, or phenoxy substituted with lower alkyl or lower alkoxy;

R^3 and R^4 are the same or different and are selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons, lower alkanoyloxy of 1 to 4 carbons, nitro, benzyloxy, benzyloxy having a single mono-lower alkoxy substituent, halogen, hydroxy, and trifluoromethyl.

4,328,343
COBALT-CATALYZED ONE-STEP SYNTHESIS OF ANNULATED PYRIDINES

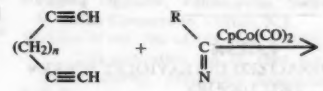
K. Peter C. Vollhardt, and Alaric Naiman, both of Berkeley, Calif., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 886,119, Mar. 13, 1978, abandoned. This application Jul. 5, 1979, Ser. No. 54,926

Int. Cl.³ C07D *217/14, 221/04, 455/04*

U.S. Cl. 546—145 **3 Claims**

1. A method of synthesizing annulated pyridines which comprises the step of reacting about equal equivalent quantities of the following reactants in the presence of cyclopentadienyl cobalt dicarbonyl, CpC $(CO)_2$, to form annulated pyridines



(1), n = 3,4,5 (2)

(3), n = 3;(4), n = 4;
(5), n = 5

$—CH_2OCH_3$, $—CH_2CO_2C_2H_5$

R=-lower alkyl, $—CH_2OCH_3$, $—CH_2CO_2C_2H_5$, -lower alkyl ester, -lower alkyl nitrile, -pentafluoromonophenyl, or -monophenyl.

4,328,344
META-AMINO SULFONAMIDO-BENZAMIDES

Ogata Masaru, Kobe, and Hiroshi Matsumoto, Takatsuki, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

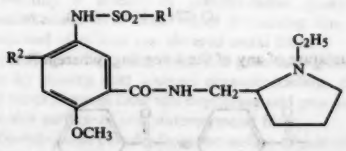
Continuation of Ser. No. 872,584, Jan. 26, 1978, abandoned. This application Feb. 26, 1980, Ser. No. 124,728

Claims priority, application Japan, Jan. 27, 1977, 52-8443; Aug. 8, 1977, 52-94884

Int. Cl.³ C07D *403/10, 207/09;* A61K *31/40*

U.S. Cl. 546—208 **11 Claims**

1. A compound selected from the group consisting of a compound of the formula



wherein R^1 is amino, methylamino, t-butylamino, dimethylamino or piperidino, and R^2 is hydrogen, methyl or chlorine, and

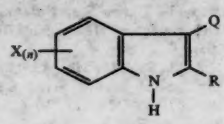
a pharmaceutically acceptable acid addition salt thereof.

4,328,345
PYRIDYL SUBSTITUTED INDOLES

Martin Steinman, Livingston, and Pirouz Tahbaz, Cedar Grove, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 947,979, Oct. 2, 1978, Pat. No. 4,225,711. This application Apr. 25, 1980, Ser. No. 143,702
Int. Cl.³ C07D *401/04*
U.S. Cl. 546—273 9 Claims

1. A compound of the formula



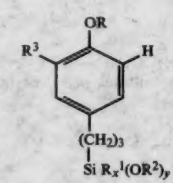
wherein X is halogeno, n is an integer of zero to three, R is methylsulfinylacetyl, methylsulfonylacetyl, methylthiohydroxyacetyl, methylthioalkoxyacetyl wherein the alkoxy group has one to six carbon atoms, methylsulfinylhydroxyethyl or methylsulfonylhydroxyethyl and Q is pyridyl.

4,328,346
SILANE-FUNCTIONALIZED ULTRAVIOLET SCREEN PRECURSORS

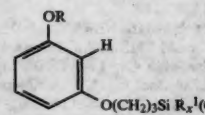
Rack H. Chung, Clifton Park, and William D. Kray, Burnt Hills, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Aug. 1, 1980, Ser. No. 174,611
Int. Cl.³ C07F *7/18*
U.S. Cl. 548—110 4 Claims

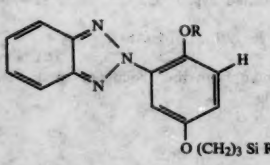
1. A silane-functionalized ultraviolet screening agent precursor selected from compounds of the formulae:



(i)

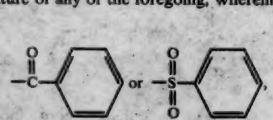


(ii)



(iii)

(iv) a mixture of any of the foregoing, wherein R is



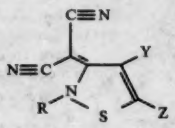
R^1 is C_1–C_6 alkyl, R^2 is C_1–C_6 alkyl or C_2–C_5 alkanoyl, R^3 is hydrogen or C_1–C_6 alkoxyl, x is 0, 1 or 2, y is 1, 2 or 3, and x+y=3.

4,328,347
3-DICYANOMETHYLENE-4-ISOTHIAZOLINES

Joseph A. Virgilio; Milton Manowitz, both of Wayne, and Emanuel Heilweil, Fairfield, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 952,038, Oct. 16, 1978, Pat. No. 4,281,136, which is a continuation-in-part of Ser. No. 854,456, Nov. 25, 1977, abandoned. This application Sep. 25, 1980, Ser. No. 190,779
Int. Cl.³ C07D *275/02*
U.S. Cl. 548—213 15 Claims

1. A 3-Dicyanomethylene-4-isothiazoline of the formula:



wherein:

R is an alkyl or alkenyl up to 8 carbons;

Y is selected from the group consisting of hydrogen, methyl, ethyl, carbomethoxy, carboethoxy, chlorine, bromine, cyano and nitro; and

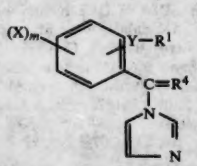
Z is selected from the group consisting of methyl, ethyl, hydrogen, chlorine, bromine, cyano, carbomethoxy and carboethoxy.

4,328,348
NOVEL BENZYLIMIDAZOLE DERIVATIVES

Masaru Ogata, Kobe; Katsuya Tawara, Ibaraki; Yoshihachi Watanabe, Otsu; Hiroshi Matsumoto, Ibaraki, and Toshio Takahashi, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jun. 6, 1980, Ser. No. 157,166
Claims priority, application Japan, Jun. 7, 1979, 54-71954; Sep. 7, 1979, 54-115465
Int. Cl.³ C07D *233/96*
U.S. Cl. 548—335 6 Claims

1. A compound of the formula:



wherein

X is halogen, nitro, C_1 to C_5 alkyl, C_1 to C_5 alkoxy or halobenzyloxy;

m is an integer of 0 to 3;

Y is oxa, thia or imino optionally substituted by C_1 to C_5 alkanoyl, C_1 to C_5 halo-alkanoyl or C_1 to C_5 alkyl;

R^1 is C_1 to C_5 alkyl, C_3 to C_{10} dialkylaminoalkyl, C_{15} to C_{20} dibenzylamino-alkyl, 1-pyrrolidinyl, 2-imidazolin-2-yl or a group of the formula $—(CH_2)_n—Z—Q$ wherein n is an integer of 0 to 4, Z is oxa, thia or a single bond and Q is phenyl or thienyl optionally substituted by 1 to 3 members selected from the group consisting of halogen, nitro, C_1 to C_5 alkyl and C_1 to C_5 alkoxy; and

R^4 is C_1 to C_5 alkylidene optionally substituted by phenyl, the benzene ring in the above formula being optionally condensed with another benzene ring.

or a pharmaceutically acceptable acid addition salt thereof.

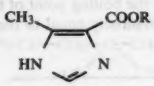
4,328,349

PROCESS FOR PREPARING 5-METHYL-4-IMIDAZOLECARBOXYLIC ACID ESTERS

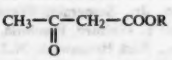
Harold Graboyes, Philadelphia; Thomas J. Kasper, Media, and Praful D. Vaidya, Warminster, all of Pa., assignors to SK&F Lab Co., Carolina, P.R.

Filed Oct. 8, 1980, Ser. No. 195,278
Int. Cl.³ C07D *233/90*
U.S. Cl. 548—343 7 Claims

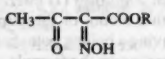
1. A process for preparing a compound of the formula:



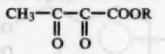
in which R is lower alkyl having 1–4 carbon atoms or benzyl, which comprises reacting an acetoacetate of the formula:



with nitrous acid, reacting the resulting 2-hydroxyiminoacetoacetate of the formula:



with formaldehyde and a mineral acid, and reacting the resulting α,β-dioxobutyrate of the formula:



with aqueous ammonia and formaldehyde at pH of about 3 to 5 in which the three steps are carried out without isolating the 2-hydroxyiminoacetate and α,β-dioxobutyrate intermediates.

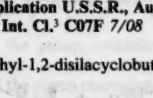
4,328,350

1,1,2,2-TETRAMETHYL-1,2-DISILACYCLOBUTANE AND METHOD FOR PREPARING SAME

Leonid E. Guselnikov, Yasenevo, 4 mikroraion, 6"V", kv. 394; Jury P. Polyakov, Dmitrovskoe shosse, 96, korpus 1, kv. 55, both of Moscow; Elvira A. Volnina, ulitsa Oktyabrskaya, 1, Scherbinka Moskovskoi oblasti, and Nikolai S. Nametkin, Leninsky prospekt, 13, kv. 11, Moscow, all of U.S.S.R.

PCT No. PCT/SU79/00037, § 371 Date Apr. 30, 1980, § 102(e) Date Apr. 30, 1980, PCT Pub. No. W080/00445, PCT Pub. Date Mar. 20, 1980
PCT Filed Jun. 15, 1979, Ser. No. 195,608
Claims priority, application U.S.S.R., Aug. 30, 1978, 2650451
Int. Cl.³ C07F *7/08*
U.S. Cl. 556—406 4 Claims

1. 1,1,2,2-Tetramethyl-1,2-disilacyclobutane of the formula:



4,328,351

PREPARATION OF TRIMETHYLSILYL CYANIDE

Kurt Findeisen, Odenthal, and Karl-Heinz Linker, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 23, 1981, Ser. No. 256,763
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018821
Int. Cl.³ C07F *7/10*
U.S. Cl. 556—415 11 Claims

1. A process for the preparation of trimethylsilyl cyanide comprising reacting trimethylsilyl chloride with an approximately equimolar amount of an alkali metal cyanide in the presence of a catalytic amount of a heavy metal cyanide and in the presence of an aprotic solvent with a boiling point above about 150° C., at a temperature between about 130° and 250° C.

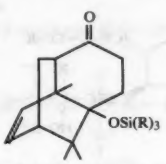
4,328,352

PROCESS FOR MAKING NORPATCHOULENOL AND NOVEL INTERMEDIATES USEFUL THEREIN

Wolfgang Oppolzer, Vandoeuvres, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 64,445, Aug. 6, 1979, Pat. No. 4,277,631. This application Sep. 22, 1980, Ser. No. 189,254
Claims priority, application Switzerland, Aug. 10, 1978, 8520/78
Int. Cl.³ C07F *7/18*
U.S. Cl. 556—436 4 Claims

1. Methanonaphthalenes of the formula



V

wherein R represents a lower alkyl, phenyl, lower alkylphenyl or phenyllower alkyl group, wherein the lower alkyl groups contain from 1 to 4 carbon atoms.

4,328,353

PROCESS FOR THE MANUFACTURE OF ORGANOHALOSILANES

Bakulesh N. Shah, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Mar. 30, 1981, Ser. No. 248,779
Int. Cl.³ C07F *7/08, 7/12, 7/16*
U.S. Cl. 556—472 11 Claims

1. A process for purifying gaseous organohalosilane products of a direct process reactor comprising the steps of:

(a) directing a stream of powder-laden gaseous organohalosilane to a filter vessel containing filter array comprised of at least one sintered metal filter;

(b) separating said powder from said gaseous organohalosilane by passing said gaseous organohalosilane through said sintered metal filter and depositing said powder upon an outer surface of said sintered metal filter;

(c) recovering said powder from the surface of said filters by halting the flow of said gaseous organohalosilane and directing a stream of blowback gas through said filter in a direction opposite to said flow of gaseous organohalosilane; and

(d) removing said powder from said filter vessel.

4,328,354
PREPARATION OF METHYLENE-BIS-PHENYLCARBAMIC ACID ESTERS AND POLYMETHYLENE-POLYPHENYLCARBAMIC ACID ESTERS

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 248,982
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3013907
Int. Cl.³ C07C *125/07*
U.S. Cl. 560—25 3 Claims

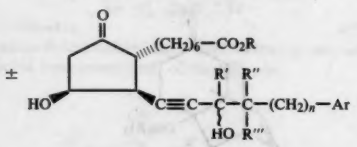
1. A process for the preparation of methylene-bis-phenylcarbamic acid esters and polymethylene-polyphenylcarbamic acid esters which comprises reacting an N-phenylcarbamic acid ester with formaldehyde, a formaldehyde derivative or a formaldehyde donor in the presence of a carboxylic acid having a pK_a of less than 4.

4,328,355
PROSTAGLANDIN DERIVATIVES HAVING ARYL, HYDROXYL, AND ALKYNYL FUNCTIONS IN ONE SIDE CHAIN

Paul W. Collins, Deerfield, and Raphael Pappo, Skokie, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 754,157, Dec. 27, 1976, abandoned. This application Sep. 10, 1979, Ser. No. 73,983
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—53 20 Claims

1. A compound of the formula



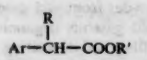
wherein R is hydrogen or lower alkyl having 1–7 carbon atoms; R′, R″, and R‴ are each individually hydrogen or methyl; n is 0–3; and Ar is phenyl, halosubstituted phenyl, lower alkyl substituted phenyl wherein the lower alkyl contains 1–4 carbon atoms, lower alkoxy substituted phenyl wherein the lower alkoxy contains 1–4 carbon atoms, p-biphenyl, or trifluoromethyl substituted phenyl, and the wavy line represents R or S stereochemistry.

4,328,356
PROCESS FOR PREPARING ESTERS OF ARYLACETIC ACIDS FROM ALPHA-HALO-ALKYLARYLKETONES

Claudio Giordano, and Francesco Casagrande, both of Novara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Feb. 15, 1980, Ser. No. 121,965
Claims priority, application Italy, Feb. 20, 1979, 20348 A/79
Int. Cl.³ C07C *69/76, 65/105*
U.S. Cl. 560—56 18 Claims

1. A process for preparing the arylacetic esters of formula (I):



(I)

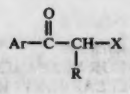
wherein:

Ar is a C_6–C_{30} aryl group or substituted aryl group;

R is a hydrogen atom or a C_1–C_{10} alkyl group or substituted alkyl group; and

R′ is the residue of a mono- or polyvalent alkyl or cycloalkyl alcohol having up to 10 carbon atoms;

characterized in that an alpha-halo-alkylarylketone of formula (II):



(II)

wherein:

Ar and R have the same meaning as in formula (I); and

X is selected from the group consisting of chlorine, bromine and iodine,

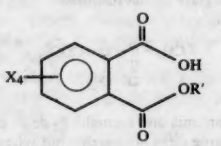
is reacted with at least an Ag compound in an alcoholic medium of formula R′OH, in which R′ has the same meaning as in formula (I), and in the presence of an acid, at a temperature ranging from 0° C. to the boiling point of the reaction mixture and at a pressure substantially equal to the ambient pressure.

4,328,357
PROCESS FOR PREPARING NITROGEN COMPOUNDS

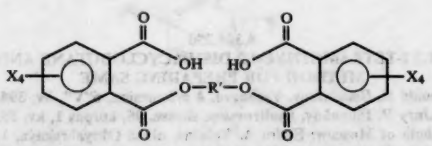
Anderson O. Dotson, Jr., Somerset; Francis T. Wadsworth, Trenton, and Lionel T. Wolford, Freehold, all of N.J., assignors to Saytech, Inc., East Brunswick, N.J.

Division of Ser. No. 759,949, Jan. 17, 1977, Pat. No. 4,140,862. This application Jul. 24, 1978, Ser. No. 927,807
Int. Cl.³ C07C *45/61*
U.S. Cl. 560—83 2 Claims

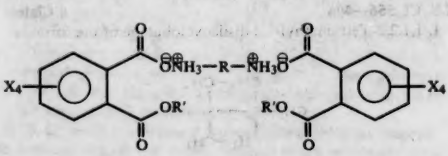
1. A process which comprises (1) esterifying a tetrahalophthalic anhydride with a mono- or dihydroxyalkane, -cycloalkane, or -aralkane having a boiling point below 250° C. to form a half-ester corresponding to the formula



wherein X is halogen and R′ is an alkyl, cycloalkyl, or aralkyl group, or a half-ester corresponding to the formula:



wherein X is halogen and R′ is an alkylene, cycloalkene, or aralkylene group and (2) reacting the resultant half-ester with a stoichiometric amount of a diaminoalkane or diaminocycloalkane containing 2–15 carbon atoms to form an alkylene- or cycloalkylenediammonium compound corresponding to the formula:



4,328,358
15-DEOXY-16-HYDROXY-16-SUBSTITUTED PROSTANOIC ACIDS AND CONGENERS

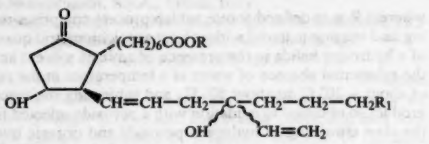
Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Garnerville, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 835,614, Sep. 22, 1977, which is a division of Ser. No. 706,343, Jul. 19, 1976. This application Sep. 26, 1979, Ser. No. 79,126

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—121 22 Claims

1. Optically active compounds of the formula:



wherein R_1 is selected from the group consisting of hydrogen and alkyl of one to three carbon atoms, R is hydrogen or methyl, and the pharmaceutically acceptable cationic salts thereof when R is hydrogen.

4,328,359
15-DEOXY-16-SUBSTITUTED-19-CHLORO-20-NOR-PROSTANE DERIVATIVES OF THE E AND F SERIES

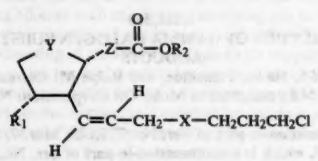
Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 46,725, Jun. 7, 1979, Pat. No. 4,278,806. This application Feb. 10, 1981, Ser. No. 233,044

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—121 36 Claims

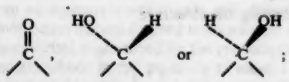
1. An optically active compound of the formula:



wherein X is:

and

Y is

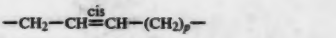


R_1 is selected from the group consisting of hydrogen and hydroxyl;

R_2 is selected from the group consisting of hydrogen and C_1 to C_6 alkyl;

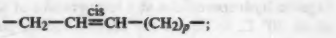
R_3 is selected from the group consisting of hydrogen, methyl, vinyl, and ethynyl;

Z is selected from the group consisting of $-(CH_2)_n-$, $-(CH_2)_mOCH_2-$, $-(CH_2)_mSCH_2-$ and



wherein n is 5 to 7, m is 3 to 5, and p is 2 to 5; with the proviso that when Y is

Z is not



the racemic mixture thereof, and when R_2 is hydrogen, the pharmaceutically acceptable salts thereof.

4,328,360
POLYPEROXY COMPOUNDS

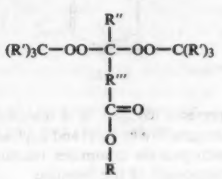
Wilbur H. McKellin, Buffalo; James R. Kolczynski, Williamsville; Orville L. Mageli, Kenmore, and Antonio J. D'Angelo, Buffalo, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 285,857, Jun. 6, 1963. This application Feb. 5, 1980, Ser. No. 118,380

Int. Cl.³ C08F *8/06*; C07C *69/00*

U.S. Cl. 560—129 6 Claims

1. A polyperoxy compound of the formula:



where:

R is an alkyl having 1–18 carbons;

$(R')_3C-$ is an alkyl having 4–24 carbons;

R'' is an alkyl or an alkyl substituted by $-COOR_5$ where R_5 is an alkyl having 1–18 carbons;

R''' is a direct bond or an alkylene diradical; and

has 3 to 18 carbons.

4,328,361
NOVEL PROCESS

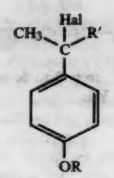
Shenghong A. Dai, Wallingford, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 16, 1981, Ser. No. 225,459

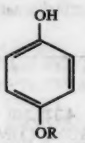
Int. Cl.³ C07C *41/26*, *37/60*

U.S. Cl. 560—130 18 Claims

1. A process which comprises reacting a compound having the formula

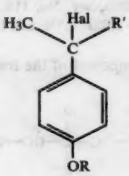


wherein Hal represents halogen, R is selected from the class consisting of hydrogen, lower-alkyl, and acyl and R′ represents lower-alkyl, with an at least stoichiometric amount of a peroxide selected from the class consisting of hydrogen peroxide and organic hydroperoxides at a temperature of about −20° C. to about 50° C. to obtain the corresponding phenol having the formula

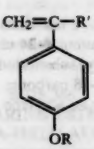


wherein R is as defined above.

7. A process for the preparation of a compound having the formula:



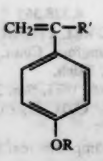
wherein Hal represents halogen, R is selected from the class consisting of hydrogen, lower-alkyl and acyl, and R′ represents lower-alkyl, which process comprises reacting a compound selected from compounds of the formula:



and oligomers thereof, wherein R and R′ are as above defined, with hydrogen halide in the presence of an inert organic solvent and in the substantial absence of water at a temperature of about −20° C. to about 50° C.

10. A process for the conversion of a starting material selected from

(a) compounds of the formula:

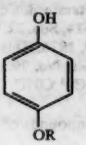


wherein R is selected from the class consisting of hydrogen, lower-alkyl and acyl and R′ represents lower-alkyl;

(b) oligomers of said compounds; and

(c) mixtures of the said compounds and oligomers thereof;

to form a corresponding phenol of the formula:



wherein R is as defined above; which process comprises reacting said starting material with at least a stoichiometric quantity of a hydrogen halide in the presence of an inert solvent and in the substantial absence of water at a temperature in the range of about −20° C. to about 50° C., and subjecting the reaction product so obtained to oxidation with a peroxide selected from the class consisting of hydrogen peroxide and organic hydroperoxides at a temperature in the range of about −20° C. to about 50° C. to obtain the said corresponding phenol.

4,328,362

CONVERSION OF ACETIC ANHYDRIDE TO ETHYLIDENE DIACETATE

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,785

Int. Cl.³ C07C *67/00, 69/16*

U.S. Cl. 560—263 **4 Claims**

1. A process for the conversion of acetic anhydride which comprises reacting said acetic anhydride under anhydrous conditions with hydrogen in the presence of a molybdenum-nickel co-catalyst or a tungsten-nickel co-catalyst, in the presence of an iodide and in the presence as a promoter of an organo-phosphorus compound or an organo-nitrogen compound wherein the phosphorus and the nitrogen are trivalent.

4,328,363

MANUFACTURE OF GAMMA HALOGEN SUBSTITUTED ADDUCTS

El-Ahmadi I. Heiba, Princeton, and Ralph M. Dessau, Edison, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 775,145, Mar. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 400,484, Sep. 24, 1973, Pat. No. 4,011,239, which is a continuation-in-part of Ser. No. 755,732, Aug. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 714,447, Mar. 20, 1968, abandoned. This application Nov. 8, 1978, Ser. No. 958,756

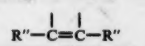
The portion of the term of this patent subsequent to Mar. 8, 1994, has been disclaimed.

Int. Cl.³ C07C *67/00, 45/69*

U.S. Cl. 560—82 **15 Claims**

1. A method for manufacturing a halogen-substituted pyrethroid intermediate compound which comprises: reacting in acetic solution:

an olefin having the structure



wherein each R″ is hydrogen or an organyl group,

an adductable organic compound selected from the group consisting of a ketone, an aldehyde, an ester, a nitrile, a nitroparaffin, a sulfoxide, a thiosulfonic acid ester, an alkanesulfonic acid, an alkanesulfinic acid, and a thiol, said adductable compound having two abstractable hydrogen atoms on a carbon atom alpha to said group,

and a stoichiometric amount of an oxidizing ion of manganese, said reaction being conducted in the presence of fluoride, chloride or bromide ion;

and recovering the fluorine-, chlorine-, or bromine-substituted adduct of said olefin.

4,328,364

ASYMMETRIC HYDROGENATION OF PROCHIRAL OLEFINS BY COMPLEXES OF TRANSITION METALS IMMOBILIZED IN CLAY-LIKE MINERALS

Marcello Mazzei, Rome; Mario Riocci, Monterotondo, and Walter Marconi, San Donato Milanese, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 946,758, Sep. 28, 1978, abandoned. This application May 23, 1980, Ser. No. 152,765

Int. Cl.[3] C07B *1/00;* C07C *51/36, 67/303*

U.S. Cl. 562—401 8 Claims

2. In a method for the asymmetric hydrogenation of an alpha-acylamido acrylic acid comprising contacting said acid with a catalyst composed of a cationic complex of rhodium with aminic derivatives of phosphorus, the improvement comprising immobilizing said catalyst on a silicate clay material selected from the group consisting of smectites and kaolin.

4,328,365

HYDROCARBON OXIDATION VIA CARBON MONOXIDE REDUCED CATALYST

William E. Slinkard, Corpus Christi, Tex., and Anthony B. Baylis, Berkeley Heights, N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 65,663, Aug. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 859,898, Dec. 12, 1977, abandoned. This application Oct. 20, 1980, Ser. No. 198,699

Int. Cl.[3] C07B *3/00;* C07C *53/08*

U.S. Cl. 562—512.2 8 Claims

1. A process for preparing acetic acid by the vapor phase oxidation of lower aliphatic hydrocarbons which process comprises reacting the lower aliphatic hydrocarbon feed stream comprising alkanes with an oxygen-containing gas in the vapor phase in the presence of steam and a catalytic amount of a catalyst consisting of reduced vanadium oxide supported on an inert porous carrier, said catalyst having been activated by the carbon monoxide reduction of vanadium pentoxide-impregnated inert porous carrier, said catalyst having in excess of 50 weight percent of vanadium pentoxide prior to said reduction.

4,328,366

TREATMENT OF WASTE STREAM FROM PENTAERYTHRITOL PRODUCTION

Charles E. Winslow, Jr., Norfolk, and Leonard C. Ellis, Chesapeake, both of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed Feb. 25, 1980, Ser. No. 124,650

Int. Cl.[3] C07C *51/48, 53/06, 29/86, 31/24*

U.S. Cl. 562—513 31 Claims

1. A process for recovery of alkali and alkaline earth metal formates from an aqueous waste stream, which aqueous waste stream is a byproduct stream derived from a reaction system in which pentaerythritol is produced by the reaction of formaldehyde with acetaldehyde in the presence of alkali and alkaline earth metal hydroxide catalysts and the pentaerythritol product is recovered from the aqueous reaction medium by crystallization, wherein the process comprises the steps if (1) contacting and extracting said aqueous waste stream with an immiscible amine solvent; (2) separating the formed immiscible organic solvent phase from the aqueous phase; (3) concentrating said aqueous phase by water removal to precipitate said alkali and alkaline earth metal formates; and (4) separating and recovering the precipitated alkali and alkaline earth metal formates from the aqueous medium.

4,328,367

TETRAHYDROPHTHALAMIDE DERIVATIVES

Hiroshi Nagase, Kawanishi, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

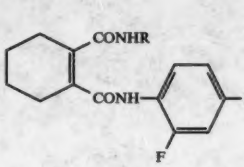
Filed Nov. 27, 1978, Ser. No. 963,762

Claims priority, application Japan, Nov. 29, 1977, 52-143672; Oct. 27, 1978, 53-133015

Int. Cl.[3] C07C *102/08;* A01N *7/02*

U.S. Cl. 564—155 13 Claims

1. A compound of the formula



wherein X is chlorine or bromine, and R is:

(1) hydrogen;

(2) alkyl of 1–10 carbon atoms;

(3) a substituted straight-chain alkyl of 1 to 4 carbon atoms, the substituent being:

(a) hydroxyl,

(b) cyano,

(c) halogen,

(d) carboxyl,

(e) straight-chain or branched alkoxy of 1 to 8 carbon atoms,

(f) alkoxycarbonyl of 1 to 4 carbon atoms,

(g) carboxylic acyloxy of 1 to 10 carbon atoms,

(h) furyl which may be substituted by nitro, halogen or lower alkyl of 1 to 3 carbon atoms, or

(i) $-(O)_mSR^1$ in which R^1 is a straight-chain or branched alkyl of 1 to 5 carbon atoms and m is 0, 1 or 2;

(4) a cycloalkyl of 3 to 8 carbon atoms;

(5) a substituted C_{3-8} cycloalkyl, the substituent being lower alkyl of 1 to 4 carbon atoms or halogen;

(6) an alkenyl of 2 to 8 carbon atoms; or

(7) an alkynyl of 2 to 8 carbon atoms.

4,328,368

METHOD FOR RECLAIMING POLYURETHANE FOAM

Robert J. Salloum, Troy, and Clifford C. Duff, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 5, 1980, Ser. No. 146,760

Int. Cl.[3] C07C *87/50;* C09B *11/02;* C07C *43/11, 43/20, 85/02, 85/24, 85/20, 85/153*

U.S. Cl. 564—393 3 Claims

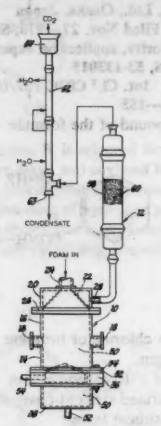
1. A continuous method of hydrolyzing urethane foam particles in a vertical hydrolysis reactor to recover chemicals therefrom, comprising:

forming a bed of urethane foam particles in the reactor;

continuously flowing superheated steam vertically upward through the bed;

controlling the temperature and flow rate of the steam such that the bed is not fluidized and such that only the foam particles then adjacent the bottom of the bed are hydro-

lyzed while unreacted steam flows upwardly from said portion and heats the balance of the particles;



draining liquid hydrolysis products from said bed as they are formed to prevent hydrolysis-impeding liquid saturation of unhydrolyzed particles; and

adding foam particles to the top of the bed to replenish it.

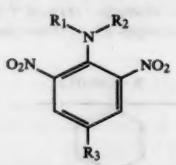
4,328,369

PROCESS FOR THE PRODUCTION OF 2,6-DINITRO-N-ALKYL-ANILINES

Luciano Baldi, Turin; Franco Collecchia, Borgaro, and Vittorio Messori, Turin, all of Italy, assignors to Rumianca S.p.A., Turin, Italy

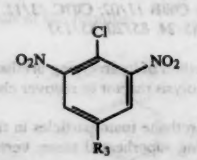
Filed Jan. 14, 1981, Ser. No. 224,998
Int. Cl.³ C07C *85/04*
U.S. Cl. 564—406 **13 Claims**

1. A continuous process for the preparation of 2,6-dinitro-N-alkyl-aniline of the formula:



(I)

wherein R_1 and R_2 independently are a saturated or unsaturated hydrocarbon radical with from 1 to 6 carbon atoms, or a cycloalkyl radical with from 3 to 6 carbon atoms in the ring, and R_3 is hydrogen, an alkyl radical with from 1 to 4 carbon atoms or an alkyl radical with from 1 to 4 carbon atoms in which the hydrogen atoms are partially or completely substituted by halogen atoms, by reacting a 2,6-dinitro-chlorobenzene of the formula:



(II)

with an amine NHR_1R_2, wherein R_3, R_1 and R_2 have the same meaning as in formula (I), which comprises continuously feeding said chlorobenzene (II) to the inlet end of a tubular reaction zone, continuously feeding an inorganic base, said amine and water to said tubular reaction zone, said inorganic base and said amine being fed in at least in part to the inlet end of said tubular reaction zone, said chlorobenzene, inorganic base and amine being fed in in substantially stoichiometric proportions and reacted in said tubular reaction zone in the liquid phase, under turbulent conditions and at a temperature not exceeding 150° C. to convert substantially completely said chlorobenzene (II) into said aniline (I), continuously discharging the resulting reaction products from the outlet end of said tubular reaction zone and recovering said aniline (I) from said reaction products.

4,328,370

AMMONATION OF TRIALKANOLAMINES

Michael J. Fazio, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 15, 1979, Ser. No. 20,891
Int. Cl.³ C07C *89/00*
U.S. Cl. 564—486 **8 Claims**

1. A process for converting a lower trialkanolamine to at least one of the corresponding monoalkanolamine and dialkanolamine which comprises contacting said trialkanolamine with at least about one mole equivalent of ammonia at about 150° C.–275° C. at superatmospheric pressure and in the presence of a hydrogenation catalyst.

4,328,371

ALKYLENE OXIDE ADDUCTS OF AMINO ALCOHOLS

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Dec. 15, 1980, Ser. No. 216,212
Int. Cl.³ C07C *91/10*
U.S. Cl. 564—506 **10 Claims**

1. Tertiary amino polyols of the following structure:

$$CH_3(CH_2)_xCH[(CH_2)_yOH](CH_2)_zN(R)_m[CH_2CH(R')OH]_n$$

and mixtures thereof; wherein the sum of the non-zero integers x plus y plus z is from 15 through 21; y plus z are greater than or equal to 3; n is 1 or 2 and the sum of m plus n is 2; R′ is H or CH_3; and R is an alkyl group.

4,328,372

RECOVERY OF CYCLOHEXANONE FROM CYCLOHEXYLBENZENE HYDROPEROXIDE ACID CLEAVAGE PRODUCT

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 27, 1979, Ser. No. 52,534
Int. Cl.³ C07C *45/53*
U.S. Cl. 568—361 **10 Claims**

1. A process for the improved recovery of cyclohexanone and alkanol products from the acid catalyzed cleavage of cyclohexylbenzene hydroperoxide which comprises the steps of:

(1) allowing the organic and aqueous phases to separate upon cooling of the reaction mass,

(2) removing the organic phase; and

(3) treating the organic phase with acid.

4,328,373

METHOD OF PREPARING ALDEHYDES

Edwin J. Strojny, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 17, 1980, Ser. No. 130,755
Int. Cl.³ C07C *45/41*
U.S. Cl. 568—435 **7 Claims**

1. In the catalytic vapor phase reduction wherein a monocarboxylic acid or ester thereof capable of being reduced to the

corresponding aldehyde is contacted with hydrogen in the presence of a catalyst at a temperature and for a time sufficient to produce an aldehyde, the improvement wherein the catalyst comprises the oxide of yttrium, cerium, praseodymium, zirconium, or uranium.

4,328,374

PROCESS FOR THE PRODUCTION OF AROMATIC DIALDEHYDES

Shigeo Yoshinaka, and Masaharu Doya, both of Niigata, Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 166,114
Claims priority, application Japan, Jul. 5, 1979, 54-85432
Int. Cl.³ C07C *45/28*
U.S. Cl. 568—436 3 Claims

1. A process for the production of aromatic dialdehydes which comprises reacting 0.2 to 20 moles of xylene chloride with 0.5–15% by weight of nitric acid at temperatures of 70°–130° C. at pressure ranging from normal pressure up to 3 kg/cm², said xylene chloride selected from the group consisting of α,α,α′-trichloroxylene alone, or a mixture of α,α,α′-trichloroxylene and α,α′-dichloroxylene; a mixture of α,α,α′-trichlorixylene and α,α,α′,α′-tetrachloroxylene and a mixture of α,α,α′-trichloroxylene, α,α′-dichloroxylene and α,α′,α,α′-tetrachloroxylene, said reaction being carried with or without the presence of a catalyst, such that when a catalyst is used the time of reaction is 3–10 hours and when no catalyst is used the time of reaction is 10–20 hours and the catalyst, when present, is a compound of a metal of atomic number from 23–29.

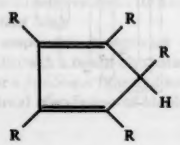
4,328,375

PROCESS FOR THE PRODUCTION OF ETHANOL AND/OR ACETALDEHYDE IN THE PRESENCE OF METAL COMPLEX CATALYST SYSTEMS

Michael T. Barlow, Addlestone, England, assignor to The British Petroleum Company Limited, London, England

Filed Nov. 26, 1980, Ser. No. 210,570
Claims priority, application United Kingdom, Nov. 27, 1979, 40843/79
Int. Cl.³ C07C *45/49, 27/22*
U.S. Cl. 568—487 13 Claims

1. A process for the production of a product containing ethanol and/or acetaldehyde which process comprises reacting, at elevated temperature and pressure, methanol with synthesis gas in the presence of a catalyst comprising a metal complex in which the metal is a metal of Group VIII of the Periodic Table excluding iron, palladium and platinum and the ligand is derived from cyclopentadiene or a substituted cyclopentadiene having the formula:



(I)

wherein one of the substituents R is independently methyl or ethyl and the other substituents R are independently hydrogen, methyl or ethyl, and a promoter comprising an iodide or a bromide.

4,328,376

METHOD OF REMOVING FLUORINATED OLEFIN BYPRODUCT FORMED DURING THE SYNTHESIS OF A FLUORINATED ETHER

Arthur Berger, Skokie, Ill., and Robert L. Simon, San Carlos, Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 31, 1980, Ser. No. 135,428
Int. Cl.³ C07C *41/34*
U.S. Cl. 568—682 11 Claims

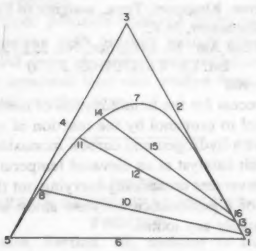
1. The method of removing fluorinated olefin byproduct formed during the synthesis of fluoromethylhexafluoroisopropyl ether product, which comprises adding a material selected from the group consisting of ammonia and primary and secondary amines to said product, to react with said fluorinated olefin byproduct, and thereafter distilling said fluoromethylhexafluoroisopropyl ether product to separate it from the treated byproduct, and removing any residual traces of said material from the ether product.

4,328,377

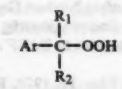
PROCESS FOR PRODUCING PHENOLIC COMPOUNDS

Akira Mori, Funabashi; Sekijiro Noda, Ichihara; Hiroshi Osuo, Ichihara; Akio Kanazawa, Ichihara; Tadahiko Nishimura, Iwakuni; Masatoshi Yamamoto, and Yoshio Tomatsu, both of Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Nov. 5, 1980, Ser. No. 204,172
Claims priority, application Japan, Nov. 5, 1979, 54-141993
Int. Cl.³ C07C *37/08*
U.S. Cl. 568—798 13 Claims

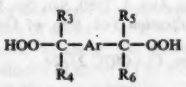


1. In a process for producing a phenolic compound which comprises treating an aralkyl hydroperoxide of the formula:



(I)

or



(II)

wherein Ar represents a phenyl ring and R_1, R_2, R_3, R_4, R_5 and R_6, independently of each other represent a lower alkyl group, provided that the total carbon atoms in R_1–R_6 does not exceed 4; with a mineral acid to cleave it to a phenolic compound of the formula:

Ar—OH or HO—Ar—OH

wherein Ar is as defined above; and a ketone, neutralizing or removing the mineral acid, feeding the resulting acid cleavage mixture containing the salt to a distillation column, distilling it therein to separate it into an overhead fraction consisting mainly of the ketone and a bottom fraction consisting mainly of

the phenolic compound, and recovering the phenolic compound from the bottom fraction; the improvement which comprises withdrawing a liquid layer from a site of feeding the acid cleavage mixture in the distillation column or from a site below it but above the bottom of the distillation column, subjecting the liquid layer to an oil-water separating means, recycling the separated oil layer to a site below said site of withdrawal, and recovering the phenolic compound from the bottom fraction whose salt content has thus been reduced.

4,328,378

2,6-DIMETHYL-6-HEPTENE-1,2-DIOL

Teruaki Mukaiyama, Tokyo, and Yoji Sakito, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 170,955, Jul. 21, 1980, Pat. No. 4,276,217. This application Feb. 9, 1981, Ser. No. 232,879

Claims priority, application Japan, Jul. 31, 1979, 54-98361; Jul. 31, 1979, 54-98362

Int. Cl.³ C07C *33/035*

U.S. Cl. 568—857 **2 Claims**

1. 2,6-Dimethyl-6-heptene-1,2-diol.

4,328,379

HOMOLOGATION PROCESS

Thomas J. Devon, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1981, Ser. No. 252,752

Int. Cl.³ C07C *29/00, 27/00*

U.S. Cl. 568—902 **4 Claims**

1. In the process for the homologation of methanol to ethanol and ethanol to propanol by the reaction of methanol and/or ethanol with hydrogen and carbon monoxide in the presence of a cobalt catalyst at an elevated temperature and pressure, the improvement comprising carrying out the reaction in the presence of a perfluorocarboxylate anion and in the absence of essentially any iodine.

4,328,380

SUBSTITUTED PHENYLPROPYL HALIDES

Ernst Buschmann, Ludwigshafen; Norbert Goetz, Worms; Bernd Zeeh, Ludwigshafen, and Juergen Varwig, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

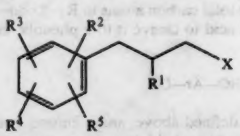
Division of Ser. No. 38,274, May 11, 1979, Pat. No. 4,250,123. This application Aug. 8, 1980, Ser. No. 176,456

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1978, 2830120

Int. Cl.³ C07C *21/24*

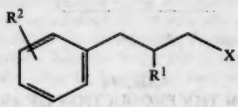
U.S. Cl. 570—191 **5 Claims**

1. A process for the preparation of a phenylpropyl halide of the formula



I

where R^1 is hydrogen or an aliphatic radical of 1 to 10 carbon atoms, R^2 is hydrogen, alkyl of 1 to 3 carbon atoms, fluorine or methoxy, R^3 is an aliphatic radical of 2 to 20 carbon atoms, a cycloaliphatic or bicycloaliphatic radical of 5 to 7 carbon atoms or haloalkyl of 3 to 10 carbon atoms, R^4 and R^5 independently of one another are each hydrogen, chlorine, bromine, nitro or acetyl and X is chlorine or bromine, wherein a phenylpropyl halide of the formula



II

where R^1, R^2 and X have the above meanings, is reacted, in the presence of an acid catalyst, with an alcohol of the formula R^3OH or an alkyl halide of the formula R^3Hal, where Hal is halogen, or with an olefin corresponding to the compound R^3H, where R^3 has the above meanings, and, where R^4 and R^5 are not both hydrogen, the reaction product obtained is further reacted to form the corresponding halogen derivative, nitro derivative or acetyl derivative.

4,328,381

ISOMERIZATION OF DICHLOROBUTENES

Itsuo Tabata; Seiichi Watanabe, and Masayuki Shinoyama, all of Ohmi, Japan, assignors to Denki Kaguku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,124

Claims priority, application Japan, Dec. 25, 1979, 54/168547

Int. Cl.³ C07C *17/24*

U.S. Cl. 570—236 **8 Claims**

1. In an isomerization between 3,4-dichlorobutene-1 and 1,4-dichlorobutene-2 in the presence of a catalyst, an improvement characterized in that the catalyst for isomerization is a combination of a copper compound and a dithiocarbamic acid derivative.

4,328,382

PROCESS FOR SEPARATING OFF OLEFINS FROM GASES CONTAINING OLEFINS

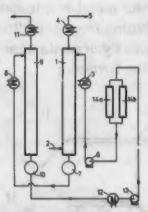
Eduard Alter, Dormagen, and Ludwig Bruns, Dormagen-Straberg, both of Fed. Rep. of Germany, assignors to EC Erdolchemie GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,883

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944151

Int. Cl.³ C07C *7/10*

U.S. Cl. 585—844 **23 Claims**



1. In a process for separating an olefin from a gaseous composition containing the same wherein the olefin is absorbed in an aqueous solution of a silver salt and the solution is thereafter desorbed to release olefin from the solution, the improvement wherein said silver salt is silver trifluoroacetate.

4,328,383

PROCESS FOR PREPARING UNSATURATED BICYCLIC HYDROCARBONS

Albert Eschenmoser, Küsnacht, and Dorothee Felix, Zürich, both of Switzerland, assignors to S. A. Firmenich, Geneva, Switzerland

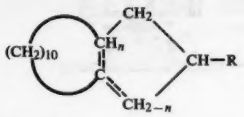
Filed Jan. 12, 1981, Ser. No. 224,193

Claims priority, application Switzerland, Jan. 18, 1980, 398/80

Int. Cl.³ C07C *1/20*

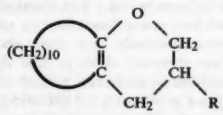
U.S. Cl. 585—357 4 Claims

1. Process for preparing an unsaturated bicyclic hydrocarbon having the formula



(I)

possessing a double bond in one of the positions indicated by the dotted lines and wherein the index n is equal to zero or 1 and R represents a hydrogen atom or a methyl radical, which comprises reacting a compound having the formula



(II)

wherein symbol R is defined hereinabove with a triaryl-phosphine in the presence of a metal halide and optionally treating the thus obtained product with an isomerizing agent.

4,328,384

FLUID ZEOLITE CATALYST CONVERSION OF ALCOHOLS AND OXYGENATED DERIVATIVES TO HYDROCARBONS BY CONTROLLING EXOTHERMIC REACTION HEAT

Nicholas Daviduk, Pennington, and James H. Haddad, Princeton Junction, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 89,706, Oct. 30, 1979, Pat. No. 4,238,631. This application Sep. 29, 1980, Ser. No. 192,151

Int. Cl.³ C07C *1/20*

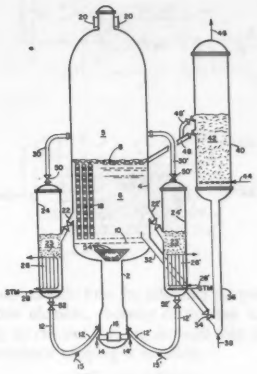
U.S. Cl. 585—469 17 Claims

1. A method for converting reactants comprising lower alcohols and related oxygenates to C_{10} and lower boiling hydrocarbon compounds, including LPG and gasoline boiling range components, which comprises:

passing a suspension of vaporized reactant material and fluid catalyst particles comprising a crystalline zeolite material characterized by a silica to alumina mole ratio of at least 12 and a constraint index of within the approximate range of 1–12 upwardly through a relatively dispersed catalyst phase riser contact zone for a time, temperature and pressure suitable to achieve up to 70% conversion of methanol in the reactant feed;

passing the suspension comprising products of reaction upwardly through a relatively dense fluid mass of catalyst particles for a residence time and temperature sufficient to achieve a total conversion of alcohol in the feed equivalent to at least 90% and produce simultaneously a product mixture of C_1 to C_{10} hydrocarbons comprising paraffins, olefins, and aromatics;

passing catalyst withdrawn from a lower portion of said relatively dense fluid mass of catalyst particles downwardly through a plurality of separate catalyst stripping-cooling zones of desired temperature restriction and



thence to the riser reactor for admixture with charged vaporous reactant;

passing stripped products from the stripping-cooling zone into admixture with product mixture above said more dense fluid mass of catalyst and withdrawing reaction products separated from said catalyst from an upper portion of said reaction zone.

4,328,385

HYDROCARBON ISOMERIZATION CATALYST AND PROCESS

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 68,278, Aug. 20, 1979, Pat. No. 4,256,566, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Dec. 3, 1980, Ser. No. 212,490

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.³ C07C *5/23*

U.S. Cl. 585—664 10 Claims

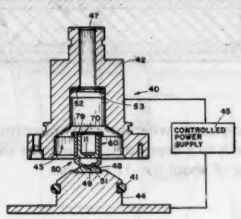
1. A process for isomerizing a C_4 to C_{20} olefin which comprises contacting said olefin at isomerization conditions including a temperature of about 0° to about 245° C., a pressure of about atmospheric to about 100 atmospheres, and a liquid hourly space velocity of about 0.1 to about 10 with a catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state during the incorporation and pyrolysis of the rhenium carbonyl component, of a tin component, and of a halogen component.

4,328,386

CRUCIBLE ASSEMBLY

Roger L. Bredeweg, Stevensville, Mich., assignor to Leco Corporation, St. Joseph, Mich.

Filed Sep. 24, 1980, Ser. No. 190,358
Int. Cl.[3] H05B 3/00
U.S. Cl. 373—118 17 Claims



1. A crucible assembly for use in an analytical furnace for the fusion of a sample comprising:

a resistance heating crucible comprising a generally cylindrical member open at an upper end for receiving a sample holding crucible, said heating crucible having an upper annular contact surface at said open end for engaging a first electrode and a lower annular contact surface at its opposite and enclosed lower end for engaging a second electrode such that electrical current can be passed through said crucible between said ends, said heating crucible further including positioning means within said heating crucible for positioning a sample holding crucible within said heating crucible in spaced relationship between said upper and lower ends; and

a sample holding crucible of generally cylindrical construction having an upper end and an enclosed lower end, said sample holding crucible cooperating with said positioning means to locate said sample holding crucible when inserted in said heating crucible with said lower end of said sample holding crucible adjacent and spaced from said lower end of said heating crucible and said open upper end of said sample holding crucible spaced from said upper annular contact surface of said heating crucible.

4,328,387

FAIL-SAFE THERMOSTATICALLY CONTROLLED CIRCUIT FOR USE IN APPARATUS FOR MELTING AND DISPENSING THERMOPLASTIC MATERIAL

Richard E. Kemble, Lilburn, Ga., assignor to Nordson Corporation, Amherst, Ohio

Filed Mar. 19, 1980, Ser. No. 131,692
Int. Cl.[3] H05B 1/02
U.S. Cl. 219—517 10 Claims

1. An apparatus for melting and dispensing thermoplastic material comprising;

means heated by an electrical heater for melting solid thermoplastic material and maintaining said thermoplastic material in a molten state until the molten thermoplastic material is dispensed;

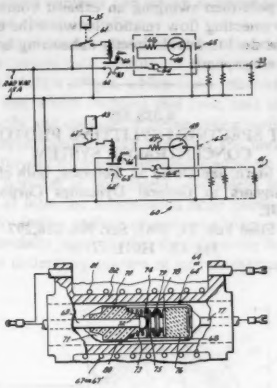
a thermostatically controlled circuit for connecting a high voltage and current power source to said electrical resistance heater if the temperature of said molten thermoplastic material is below a preselected thermostat temperature setting, said thermostatically controlled circuit including,

a fusible element through which said power source is connected to said electrical resistance heater;

melting means for melting said fusible element if the temperature of said molten thermoplastic material reaches a predetermined shut-off temperature;

said melting means comprising a resistive wire in thermal contact with a ceramic tube within which said fusible element is mounted, said resistive wire being connected to a power source when the temperature of said molten thermoplastic material reaches said predetermined shut-off temperature, and

an air flow through passage surrounding said fusible element



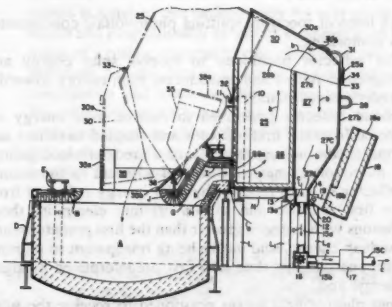
within said ceramic tube for allowing air to circulate over said fusible element, thereby dissipating heat generated internally by current flowing through said fusible element so that nuisance tripping is avoided.

4,328,388

ELECTRO FURNACE FEEDING AND FURNACE FUME UTILIZATION AND CONTROL

Levi S. Longenecker, 61 Mayfair Dr., Pittsburgh, Pa. 15228

Filed Feb. 11, 1980, Ser. No. 120,633
Int. Cl.[3] F27B 9/12
U.S. Cl. 373—80 19 Claims



1. In a method of preheat-conditioning and feeding metal scrap into a melting furnace having a roof provided with a charging opening through which a preheated metal scrap body is to be fed, and having a hot fume exhaust port which comprises the steps of: filling a scrap bucket with a body of metal scrap to be preheated, placing the filled scrap bucket in a closed-off upright position adjacent the furnace, positively moving hot fume directly from the exhaust port through the body of metal scrap from its bottom portion in an enclosed relation within the bucket and then from an opposite bottom portion into an outflow duct for environmental treatment before discharge into the atmosphere, continuing the defined movement of the hot fume to preheat the scrap body, thereafter swinging the scrap bucket with the preheated scrap therein on a fixed position pivot support above and adjacent the furnace from its hot fume-receiving position into a top endwise open scrap charging position and progressively charging its

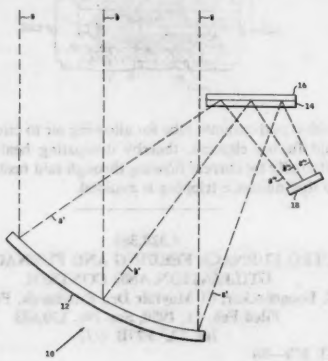
preheated scrap content through the charging opening into the furnace, and when the scrap bucket with its preheated scrap content has been swung out of its fume-receiving position with the exhaust port then swinging an exhaust connector into a direct interconnecting flow relation between the exhaust port and the outlet duct to avoid directly exhausting hot fume into the ambient atmosphere.

4,328,389

INHERENT SPECTRUM-SPLITTING PHOTOVOLTAIC CONCENTRATOR SYSTEM

Theodore G. Stern, and David M. Peterson, both of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Feb. 19, 1981, Ser. No. 236,297
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—246 **11 Claims**



1. An interent spectrum splitting photovoltaic concentrator system comprising:
- a first reflector positioned to receive solar energy and adapted to reflect and concentrate such energy toward a predetermined point;
- a second reflector positioned to receive solar energy reflected from the first reflector and adapted to reflect and concentrate such energy toward a predetermined point;
- first photovoltaic means positioned adjacent to the second reflector so as to receive the solar energy reflected from the first reflector and to convert into electricity those photons with energies greater than the first predetermined bandgap energy, said means being transparent to photons with energies less than said first predetermined bandgap energy; and
- second photovoltaic means positioned to receive the solar energy reflected from the second reflector and to convert into electricity those photons with energies less than the bandgap energy of the first photovoltaic means.

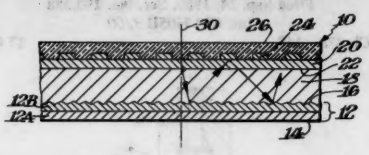
4,328,390

THIN FILM PHOTOVOLTAIC CELL

John D. Meakin, and Julio Bragagnolo, both of Newark, Del., assignors to The University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 76,238, Sep. 17, 1979, abandoned. This application Sep. 8, 1980, Ser. No. 185,322
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—259 **5 Claims**

1. In a thin film photovoltaic cell having a transparent electrical contact and an opaque electrical contact with a pair of semiconductor layers less than about 10 microns thick therebetween and with the semiconductor layers functioning as an absorber and as a collector, respectively, the improvement being the electrical junction between said semiconductor layers being planar, said opaque electrical contact being in the form of a substrate having an exposed outer surface and a reflective inner surface in the interior of said cell, and said inner surface being modified by microroughening and also



being macro-planar wherein said microroughening of said inner surface is to a depth of 0.2–1 micron and with a peak-to-peak spacing of about 0.4–11 microns.

4,328,391

GAS INSULATED TRANSMISSION LINE HAVING TAPERED PARTICLE TRAPPING RING

Alan H. Cookson, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 19, 1981, Ser. No. 226,334
Int. Cl.³ H01B *9/06, 9/04;* H02G *5/06*
U.S. Cl. 174—14 R **7 Claims**

1. A gas-insulated transmission line comprising:
- an elongated, hollow outer sheath;
- an elongated inner connector at high potential with respect to said outer sheath disposed within said outer sheath;
- an insulating gas electrically insulating said inner conductor from said outer sheath;
- an insulating spacer insulatably supporting said inner conductor within said outer sheath; and
- a longitudinally-extending particle-trapping ring secured to said spacer and extending longitudinally-outwardly therefrom, said particle-trapping ring being spaced-apart from said outer sheath and said inner conductor, said particle-trapping ring comprising a central portion adjacent said spacer having a first, fixed diameter and two tapering end portions extending longitudinally-outwardly from opposite longitudinal ends of said central portion and radially-inwardly towards a second diameter less than said first diameter.

4,328,392

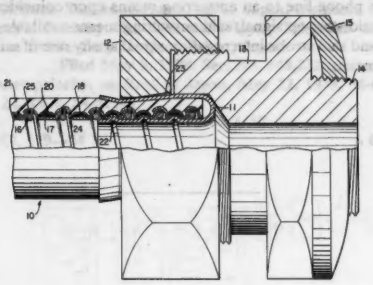
WELDED-TURN HELICAL ELECTRICAL CONDUIT WITH ELECTRICALLY CONDUCTIVE GROUNDING ELEMENT

Thomas A. Kutnyak, Greenwood, S.C., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed May 15, 1980, Ser. No. 150,213
Int. Cl.³ H02G *3/04;* F16L *11/10, 11/12*
U.S. Cl. 174—68 C **14 Claims**

1. An electrical conduit comprising:
- (a) a self-supporting metal wire helix;
- (b) a metal foil channel applied helically about the helix and spanning the turns thereof, the edge portions of the channel being overlapped over the turns of the helix;

(c) weld means affixing the overlapped edge portions of the channel to one another and to the helix;



(d) an electrically conductive extended grounding element applied along the central portion of the channel; and
(e) an outer circumferentially complete jacket.

4,328,393

CABLE FITTING WITH AN ELASTIC INSULATOR AND METALLIC HOUSING

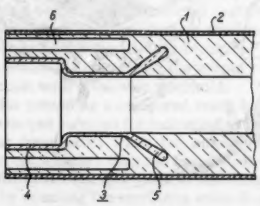
Lothar Goehlich, and Klaus Kretschmer, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,050

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951727

Int. Cl.³ H02G *15/184*

U.S. Cl. 174—73 R **1 Claim**



1. In a fitting for plastic insulated electric cables, especially for medium and high voltage cables, comprising an elastic, prefabricated insulator provided with a hole and which has at least one cylindrical end with a control deflector of elastomer material embedded on the inside, said deflector having a cylindrical base part followed by conical part, and a metallic housing surrounding the insulator, the improvement comprising a circular slot concentric to the axis of the insulator formed in the cylindrical end of the insulator at the end face, and the depth of said slot corresponding approximately to the length of the cylindrical base part of the control deflector.

4,328,394

BONDED SHEATH CABLE

Charles J. Aloisio, Jr., Atlanta; George S. Brockway, II, Lawrenceville; Alvin C. Levy, Atlanta; Randy G. Schneider, Marietta, and George M. Yanizeski, Rosell, all of Ga., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J. and Western Electric Company, Inc., New York, N.Y.

Filed Jan. 14, 1981, Ser. No. 225,082

Int. Cl.³ H01B *7/18*

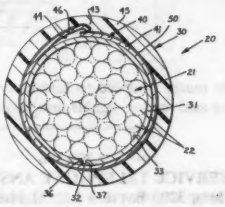
U.S. Cl. 174—106 D **14 Claims**

1. A bonded sheath cable, which comprises:

a core which includes at least a plurality of individually insulated electrical conductors; and

a sheath which encloses and which is juxtaposed with said core, said sheath including:

a corrugated shield which is made of metallic material characterized by a modulus of elasticity in the range of about $27\text{–}33\times10^6$ psi, which has a relatively high stiffness, and which encloses said core, said shield having inwardly and outwardly facing major surfaces with an overlapped seam having overlying and underlying portions formed between overlapping adjacent longitudinal edge portions of said shield, said shield being formed with at least the longitudinal edge portion of the inwardly facing surface of said overlying portion being substantially juxtaposed to the outwardly facing surface of the underlying portion of said shield; and



a jacket which is made of a plastic material and which is adhesively bonded to substantially all of said outwardly facing surface of said corrugated metallic shield with a bond strength which is sufficient to prevent delamination and buckling of the sheath in a temperature range of about −15° C. to about 70° C., said jacket plastic which is notched circumferentially by said corrugated shield and longitudinally by said overlapped seam being made of a plastic material having elongation properties sufficient for the jacket to resist rupture caused by corrugation and seam notching when said jacekt is biaxially stressed by forces which are transferred from said shield because of its relatively high stiffness to said jacket in the vicinity of said seam when said cable is installed in said range of temperatures.

4,328,395

SPEECH SYNTHESIS SYSTEM WITH VARIABLE INTERPOLATION CAPABILITY

Alva E. Henderson, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,139

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SM **12 Claims**

1. A speech synthesis system comprising:

(a) input means for receiving frames of data, said frames of data comprising speech data and interpolation data;

(b) digital storage means for storing scale data;

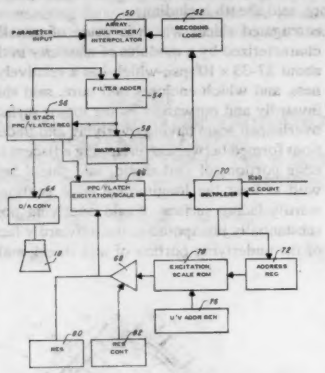
(c) address means coupled to said input means and said digital storage means for selectively addressing specific scale data in response to said interpolation data;

(d) interpolation means coupled to said input means and said digital storage means for interpolating between adjacent frames of said speech data based upon said specific scale data;

(e) synthesizer means coupled to said input means and to said interpolation means for selectively converting said speech data into digital signals representative of human speech;

(f) digital to analog converter means coupled to said synthe-

sizer means for converting said digital signals representative of human speech into analog signals; and



(g) audio means coupled to said converter means for converting said analog signals into audible sound.

4,328,396

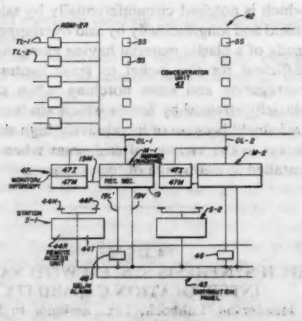
TOTAL SERVICE TELEPHONE ANSWERING SYSTEM

Peter F. Theis, 3203 Bayview La., McHenry, Ill. 60050

Continuation of Ser. No. 605,240, Aug. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 439,445, Feb. 4, 1974, abandoned, and Ser. No. 604,390, Aug. 15, 1975. This application Nov. 30, 1977, Ser. No. 856,105

Int. Cl.³ H04M *11/10*; G11B *19/00*

U.S. Cl. 179—6.04 **5 Claims**



1. A telephone answering and conversing system comprising:

a matrix of gate means including at least one group of horizontally arrayed gates, and at least one group of vertically arrayed gates;

at least two incoming phone lines, each line associated with one of said groups of horizontally arrayed gates, and each line adapted to pass a start-up signal to each gate means in the group of horizontally arrayed gates with which it is associated, said start-up signal being indicative of an incoming call from a caller;

at least two answering means, each answering means associated with one of said groups of vertically arrayed gates, and each answering means adapted to pass an answering means-available signal to each gate means in the group of vertically arrayed gates with which it is associated, said answering means-available signal being indicative of the availability of an answering means for conversing with a caller;

means for passing a strobe interrogation signal to each of said gate means; and

latch means coupled to each of said gate means, for coupling a phone line to an answering means upon coincidence of said start-up signal, said answering means-available signal and said strobe interrogation signal at any one of said gate means.

4,328,397

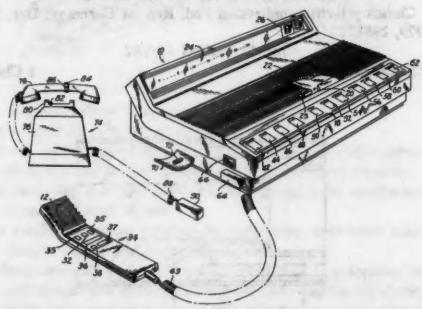
METHOD AND APPARATUS FOR CONTROLLING PREDETERMINED MACHINE CONDITIONS, SUCH AS THE OPERATING CONDITIONS OF A DICTATION/TRANSCRIPTION MACHINE

David B. Chamberlin, Milford, Conn., assignor to Dictaphone Corporation, Rye, N.Y.

Filed Aug. 14, 1980, Ser. No. 178,106

Int. Cl.³ H04M *1/65, 11/10*

U.S. Cl. 179—6.09 **30 Claims**



1. A method of controlling a predetermined condition of a dictate and/or transcribe machine by a processor programmed to cycle through a set of instructions, said predetermined condition being selectable by a plurality of switch means, said processor carrying out the steps of (a) sensing if a first of said switch means is actuated; (b) if said first switch means is actuated, sensing if said dictate and/or transcribe machine exhibits said predetermined condition, and (i) if so, terminating said predetermined condition, (ii) if not, disposing said dictate and/or transcribe machine in said predetermined condition; (c) if said first switch means is not actuated, sensing if a second of said switch means is actuated; (d) disposing said dictate and/or transcribe machine in said predetermined condition if said second switch is actuated; (e) sensing when said second switch means subsequently is deactuated; (f) terminating said predetermined condition when said second switch means subsequently is deactuated; (g) setting a flag signal when said first or second switch means is actuated to dispose said dictate and/or transcribe machine in said predetermined condition; (h) resetting said flag signal when said first switch means is re-actuated; (i) resetting said flag signal when said second switch means is deactuated, whereby said dictate and/or transcribe machine exhibits said predetermined condition only when said flag signal is set; and (j) cyclically repeating steps (a) through (i).

4,328,398
DIGITAL MULTI-FREQUENCY RECEIVER

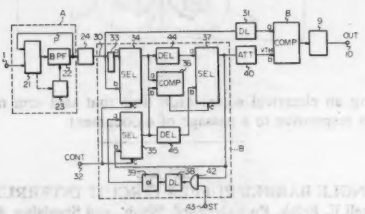
Masaharu Kawaguchi; Yoshikatu Shiraishi; Kazuhiro Maruyama, all of Tokyo; Hitoshi Imagawa, Hachioji, and Yoshimasa Kaneko, Sayama, all of Japan, assignors to Oki Electric Industry Co., Ltd. and Nippon Telegraph & Telephone Public Corp., both of Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,232

Claims priority, application Japan, May 22, 1979, 54-62141; May 22, 1979, 54-62142

Int. Cl.³ H04M *1/50*

U.S. Cl. 179—84 VF **6 Claims**



1. A digital multi-frequency receiver for detecting particular frequencies in a digitalized input signal comprising;

(a) an input terminal for receiving said digitalized input signal,

(b) a digital filter block connected to said input terminal having a digital bandpass filter for detecting the particular frequencies on a time divisional basis, a coefficient generator for providing coefficients for the operation of said digital filter, and an input control circuit for operating said digital filter as a recursive digital filter by providing an input signal to said digital filter recursively and selecting coefficients in said coefficient generator,

(c) an absolute value circuit connected to the output of said digital filter block for providing an absolute digital value of the output of the digital filter block,

(d) a comparator for comparing the output of the absolute value circuit with a variable threshold,

(e) means for providing a compared result by the comparator to an output terminal for indicating the presence of the particular frequencies when the output of the absolute value circuit is higher than the variable threshold, and

(f) means for providing said variable threshold to said comparator by selecting the maximum value from among (i) a predetermined fixed value, (ii) the product of the predetermined value α which is less than 1 and the maximum value of the variable threshold means in a preceding frame, and (iii) the maximum value of the output of the absolute value circuit in a present frame.

4,328,399
PUSHBUTTON SWITCH ASSEMBLY FOR TELECOMMUNICATIONS AND OTHER INPUT

Roger Perks, Kanata, and Phillip J. Dudley, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 9,656, Feb. 5, 1979, Pat. No. 4,243,846. This application Mar. 20, 1980, Ser. No. 131,877

Int. Cl.³ H04M *1/50*

U.S. Cl. 179—90 K **16 Claims**

1. A pushbutton switch assembly comprising:

a steel sheet circuit member having upper and lower surfaces;

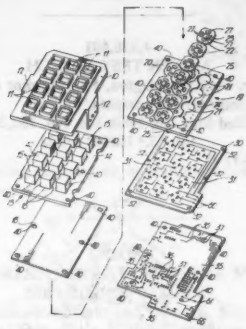
a porcelain layer on at least said upper surface;

a contact circuit on the porcelain layer, the circuit including a plurality of switch positions, each position including at least one contact area;

a contact member extending over said contact circuit, the contact member including a plurality of deformable contact portions, each contact portion aligned with a switch position;

a pushbutton assembly mounted on said contact member and including a plurality of pushbuttons, a pushbutton for each said deformable contact portion;

said contact member being of flexible electrically insulating material, each of said deformable contact portions comprising a domed area extending towards a pushbutton, a domed area aligned with each pushbutton and a related switch position on said contact circuit, an electrically



conductive surface layer on a concave surface of each domed area and electrical conductors on said flexible contact member connecting to said electrically conductive surface layers;

each said deformable contact portion having a snap action for rapid making and breaking of contact between the conductive surface layer and the related contact area, depression of a pushbutton pressing on a deformable contact portion to move said conductive surface layer into contact with the related contact area.

4,328,400
COAXIAL MULTI-WAY PLANAR DIAPHRAGM TYPE LOUDSPEAKER SYSTEM

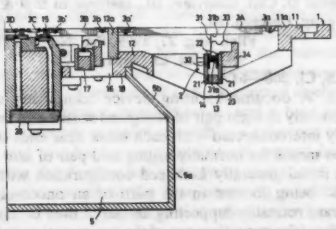
Kunihiko Shimada, and Yukio Tsuchiya, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,117

Claims priority, application Japan, Jun. 30, 1979, 54/90263[U]; Jun. 30, 1979, 54/90264[U]; Jun. 30, 1979, 54/90268[U]; Jun. 30, 1979, 54/90276[U]

Int. Cl.³ H04R *9/06*

U.S. Cl. 179—116 **8 Claims**



1. A coaxial planar diaphragm loudspeaker system comprising at least a bass-range substantially square planar diaphragm and a mid-range substantially square planar diaphragm, said mid-range planar diaphragm being coaxially arranged with respect to said bass-range planar diaphragm so that said diaphragms are also co-planar, an outer rigid frame assembly, an

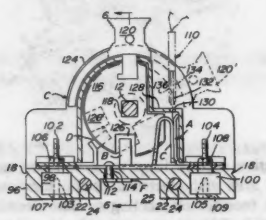
inner circumferential frame rigidly coupled to said outer frame assembly, a sealed backchamber fittedly secured to said inner circumferential frame, a common edge stand rigidly secured to said inner circumferential frame opposite to said backchamber, an inner peripheral edge portion of said bass-range diaphragm and an outer peripheral edge portion of said mid-range diaphragm being commonly supported by said edge stand, and individual electromagnetic diaphragm-driving units mounted on said outer frame assembly and said inner circumferential frame for driving said bass-range and mid-range diaphragms, respectively.

4,328,401

METER TEST SWITCH

John M. Carr, Fort Washington, Pa., assignor to The Eastern Specialty Company, Philadelphia, Pa.

Filed Mar. 20, 1980, Ser. No. 132,203
Int. Cl.³ H01H *21/22*
U.S. Cl. 200—11 R **26 Claims**



1. An electrical switch comprising:

a pair of spaced apart plates each with a conductive portion movable between a first "normal" position and a second "test" position, said plates being provided with matching non-conductive portions;

at least two spaced apart conductive contacts extending within a region between said plates such that each contact bridges the space between the spaced apart plates;

said non-conductive portions and said conductive contacts being disposed in positions so that said contacts wipe against the conductive portions of said plates when said plates are disposed in said "normal" position and so that at least one of said conductive contacts is aligned with said non-conductive portions while at the same time at least another one is out of alignment when said plates are disposed in said "test" position.

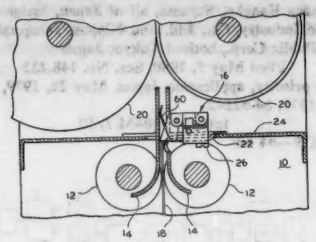
4,328,402

SENSING SWITCH FOR DETECTING A DOCUMENT

Daniel D. Call, Glenview, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Aug. 27, 1979, Ser. No. 70,279
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.41 **5 Claims**

1. A document-sensing device comprising an articulated generally straight pair of elongated sensor arm members pivotally interconnected with each other near ends thereof, spring bias means for normally urging said pair of arm members into an initial generally L-shaped configuration with a toe of the "L" being located in the path of an oncoming card, pivot means rotatably supporting an end of the "L" opposite the toe thereof for mounting one of the sensor arm members on a base structure, said spring bias means being located at each of the pivots for urging said arm members to said initial configuration, the other of said arm members being shaped and proportioned relative to said one arm member to enable said pair of arm members to pivot and form a mutual angle which is more acute than an angle formed by said initial "L" shape, means responsive to passage of a document by the toe of said "L" shape for urging said arm members to pivot on both of said pivots against the urging of said spring bias, and means for



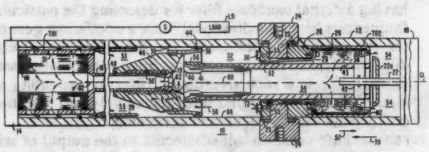
giving an electrical signal each time that said arm members pivot responsive to a passage of a document.

4,328,403

SINGLE BARREL PUFFER CIRCUIT INTERRUPTER

Russell E. Frink, Port Orchard, Wash., and Stanislaw A. Milianowicz, Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 769,140, Feb. 15, 1977. This application Aug. 2, 1979, Ser. No. 63,014
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **6 Claims**



1. A puffer circuit interrupter comprising:

(a) insulating tube means having first and second spaced external terminal means thereon, said external terminal means communicating with the internal portion of said tube means;

(b) first electrical contact means disposed within said tube means in electrical contact with said first external terminal means;

(c) second electrical contact means disposed within said tube means in electrical contact with said second external terminal means, said second contact means being movable into and out of a disposition of electrical engagement with said first contact means;

(d) piston means fixedly disposed upon said second contact means for moving therewith and slidably disposed in gas seal relationship against the inner wall of said insulating tube means for longitudinally moving thereagainst, said piston means having an opening therein which communicates with an arc region between said first and second contact means, puffer gas which resides between said inner wall of said tube means and the outer portion of said second contact means being forced to flow by the movement of said piston means through said opening into said arc region as said second contact means disengages from said first contact means to affect an arc between said first and second contact means; and

(e) nozzle means fixedly disposed upon said piston means radially outboard of said opening therein and movably disposed upon said first contact means at all times, said nozzle means at all times being radially interposed between said arc region and said insulating tube means to protect said insulating tube means from direct radial arc effects.

4,328,404

ACTUATION APPARATUS FOR A CONTROL SWITCH

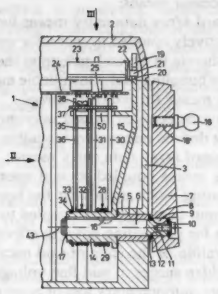
Herbert Palloch, Schwetzingen, and Hans Erndt, Wiesloch, both of Fed. Rep. of Germany, assignors to Frankl & Kirchner GmbH & Co. KG, Fabrik für Elektromotoren u. elektrische Apparate, Schwetzingen, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,891

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913861; Mar. 13, 1980, 3009668

Int. Cl.³ H01H *3/04*

U.S. Cl. 200—153 SC 15 Claims



1. In an actuation apparatus for a control switch operated by a switching member, a pivoting shaft and an actuation arm mounted on said pivoting shaft with a torsion spring, said switch producing various control signals in accordance with the position of the switching member, means to couple said actuation ar with the switching member, said actuation arm being supported, pivotably from a central position of rest, about an axis defined by the pivoting shaft counter to the restoring force of the torsion spring, said spring comprising off-standing free arms, wherein one respective stationary initial stop is provided for each free arm for the purpose of fixing the respective positions of the arms in a position of rest and wherein at least one coupler contacting the free arms is connected with the actuation arm, the improvement comprising a respective additional stop, acting as a respective end stop limiting the switch path operatively associated with each said free arm of said torsion spring.

4,328,405

TRIGGER SWITCH AND PRINTED CIRCUIT BOARD ARRANGEMENT FOR A PORTABLE TOOL

Giuseppe Cuneo, Calolziocorte, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 11, 1980, Ser. No. 186,307

Claims priority, application Italy, Sep. 12, 1979, 22514/79[U]

Int. Cl.³ H01H *13/08*

U.S. Cl. 200—157 10 Claims

1. A hand-held portable electric tool, comprising:

an electric motor;

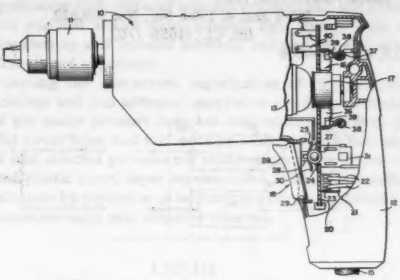
a printed-circuit board for connecting electrical supply current to the motor;

at least two terminals on the printed-circuit board through which a circuit to the motor is closed when said terminals are electrically connected;

a switch assembly mounted directly upon said printed-circuit board and comprising manually actuatable means, contact means, and a housing;

said manually actuatable means including a plunger movable in a direction transverse to the flat surface of the printed-circuit board, said plunger being slidably mounted in said housing; and

said contact means comprising a resilient bridging element mounted on said plunger for electrically bridging said terminals when said actuatable means is moved toward said printed-circuit board, said bridging element and said



housing being disposed on opposite sides of said printed-circuit board.

4,328,406

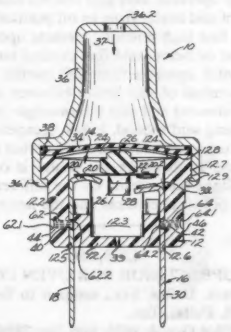
CONDITION RESPONSIVE ELECTRICAL SWITCH AND METHOD OF MAKING

Thomas E. Evans, Rehoboth, and David S. Keyes, Arlington, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1979, Ser. No. 63,004

Int. Cl.³ H01H *35/34*

U.S. Cl. 200—293 4 Claims



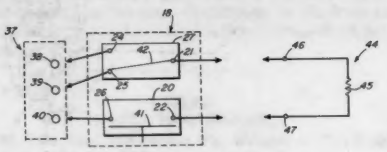
1. A condition responsive electrical switch comprising first switch component means of a predetermined configuration having resiliently movable contact means thereon and having a condition responsive dished disc element actuable to move from an original dished configuration to an inverted dished configuration with snap action for moving the movable contact means in response to change in switch operating conditions, a second switch component of a predetermined configuration having fixed contact means thereon, and a base of a fusible organic dielectric material providing a reference surface thereon, said base having separate first and second fused portions securing the first switch component means and the second switch component to the base means in a selected location relative to each other and to said reference surface so that the movable contact means are movable between a first position in spaced electrically insulated relation to the fixed contact means and a second position electrically engaged with the fixed contact means with a selected force and so that the condition responsive means are actuable for moving the movable contact means between said positions in response to the occurrence of preselected device operating conditions.

4,328,407

HEATING SYSTEM AND CONTROL

Elias G. Chaggaris, Mercerville, N.J., assignor to Conergy Associates, Mercerville, N.J.

Filed Jan. 4, 1980, Ser. No. 109,522
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—508 **7 Claims**



1. An energy conserving electric space heating system adapted to provide greater comfort to the occupants of the space being heated comprising

at least one electrical resistance heater positioned to heat the desired space and having terminals for connection to a power source,

an electrical power source adapted for connection to a power supply and including a first high potential element, a second and opposite high potential element and an intermediate potential element,

a thermostat control unit at a location remote from said heater sensing a first predetermined control temperature and a second control temperature several degrees colder than said first temperature,

a first switch operable from said control unit to switch a first terminal of said heater from an off position to a connection with said first high potential element upon sensing a temperature at or below said first control temperature, and

a second switch operable from said control unit to switch a second terminal of said heater between said second high potential element and said intermediate potential element upon sensing said second, lower, temperature,

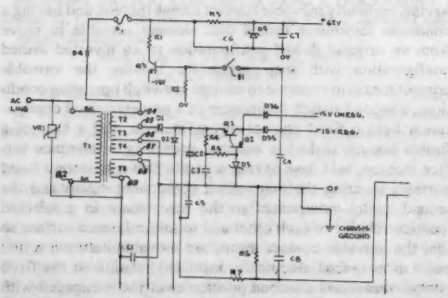
whereby at temperatures between said first temperature and said second temperature the heater is operated at a reduced voltage represented by the difference between the first high potential element and the neutral element.

4,328,408

MICROPROCESSOR FOR OVEN CONTROL

James A. Lawson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 4, 1976, Ser. No. 729,053
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **3 Claims**



1. A solid state controller for automatically controlling the temperature of a heating element of an oven for each of a selected number of cooking cycles and for a selected length of time for each of said cooking cycles, said controller comprising:

(a) a transformer for connection to a 60-Hz AC line voltage power source;

(b) electrically controllable means for activating and deactivating said heating element;

(c) semiconductor microprocessor means including a programmed ROM containing a permanently stored instruction set for controlling said controllable means to selectively activate and deactivate said heating element according to said instruction set and data entered into said microprocessor means;

(d) a keyboard array data entry means having a plurality of keys selectively coupled to said microprocessor means for entering therein in dependence upon the state of said keys;

(e) means for coupling said controllable means to said microprocessor means for control thereof;

(f) display means coupled to said microprocessor means for displaying desired parameters including data entered from said keyboard array data entry means;

(g) clocking means coupled to said microprocessor means for generating clock signals for the operation thereof;

(h) power input control means coupled to said microprocessor means for preventing adverse effects caused by undesired alteration of the state of said microprocessor means due to sudden surges of said line voltage, abnormally low line voltage or momentary loss of power, said power input control means including:

(i) rectifier means connected to a secondary winding of said transformer for providing a rectified voltage representative of the 60-Hz AC line voltage,

(ii) comparison means for comparing said rectified voltage with a predetermined voltage level, said comparison means being connected to said microprocessor means for providing a start signal when a comparison exists, and

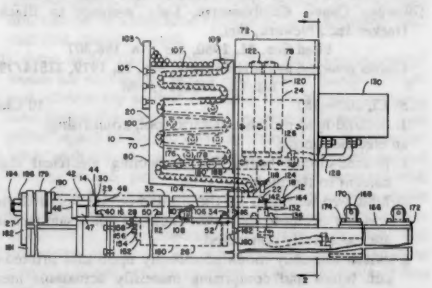
(iii) a power-up delay capacitor connected to receive the rectified voltage and selected to require a predetermined time to charge to the value of the rectified voltage thereby providing a known delay to said comparison means.

4,328,409

CONTINUOUS, AUTOMATIC MESH WELDING STRUCTURE AND METHOD

Charles Senn, 13957 13-Mile Rd., Apt. 1, Warren, Mich. 48093

Continuation-in-part of Ser. No. 828,983, Aug. 30, 1977, Pat. No. 4,174,475. This application Nov. 8, 1979, Ser. No. 92,560
Int. Cl.³ B23K *11/10*
U.S. Cl. 219—56 **8 Claims**



4. The method of continuously automatically welding heavy steel mesh comprising supporting initial longitudinally extending reinforcing rods in transversely spaced apart parallel positions, automatically feeding transversely extending reinforcing rods onto the longitudinally extending reinforcing rods one at a time at a predetermined welding position, welding a trans-

versely extending reinforcing rod to the longitudinally extending reinforcing rods at the intersections of the longitudinally extending reinforcing rods and the transversely extending reinforcing rod simultaneously, indexing the welded reinforcing rods to position the longitudinally extending reinforcing rods for receipt of a subsequent transversely extending reinforcing rod at the welding position in parallel spaced apart relation to the welded transversely extending reinforcing rod a distance equal to the desired spacing of transversely extending reinforcing rods on the longitudinally extending reinforcing rods, repeating the feeding, welding and indexing steps until a complete mesh section is produced, supporting additional longitudinally extending reinforcing rods on the initial longitudinally extending reinforcing rods over a substantial portion of the length thereof during repetitive welding and indexing steps, and moving the additional longitudinally extending reinforcing rods axially into the welding position after the initial longitudinally extending reinforcing rods have been indexed out of the welding position.

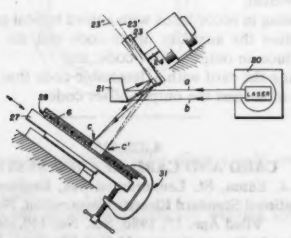
5. Structure for continuously and automatically welding steel mesh comprising means for positioning an initial plurality of parallel, longitudinally extending and transversely spaced apart reinforcing rods with one end at a welding position, means for feeding a transversely extending reinforcing rod onto the initial longitudinally extending reinforcing rods at the welding position, means for simultaneously welding the longitudinally extending reinforcing rods and the transversely extending reinforcing rod to each other at the intersections thereof at the welding position, means for indexing the welded longitudinally extending and transversely extending reinforcing rods away from the welding position a distance substantially equal to desired spacing of transversely extending reinforcing rods on the longitudinally extending reinforcing rods whereby transversely extending reinforcing rods may be repeatedly automatically welded to the longitudinally extending reinforcing rods to provide a complete reinforcing mesh section, structure for supporting additional longitudinally extending reinforcing rods on the initial longitudinally extending reinforcing rods over a substantial portion of the length thereof, and means for moving the additional longitudinally extending reinforcing rods into the welding position after the initial longitudinally extending reinforcing rods have been indexed out of the welding position.

4,328,410

LASER SKIVING SYSTEM

Sandra H. Slivinsky, 739 Joyce St., Livermore, Calif. 94550, and Norman E. Ogle, 832 Bryant St., Palo Alto, Calif. 94301

Filed Aug. 24, 1978, Ser. No. 936,566
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LJ **8 Claims**



1. A method of removing selected portions of a plastic cover layer which is attached to a metallic substrate by means of an adhesive material, without vaporizing the metallic substrate, comprising the steps of:

(a) masking said plastic cover layer such that only said selected portions are exposed;

(b) exposing said selected portions to a rotating beam of high intensity light energy;

(c) controlling said beam in intensity, duration, and point of application such that said selected portions and said adhesive material absorb more infrared light energy than is absorbed by said metallic substrate and said metallic substrate is not vaporized;

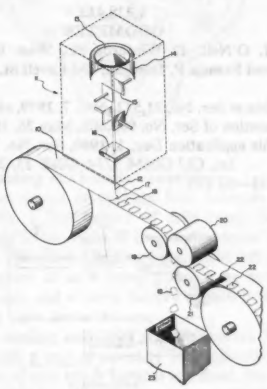
(d) causing the concurrent vaporization of said selected portions and said adhesive material to produce a volume of gas under pressure between said selected portions of said cover layer and said metallic substrate such that any of said selected portions not removed by vaporization of said plastic cover layer are removed from said metallic substrate by explosion of said volume of gas produced by vaporization of said adhesive material.

4,328,411

CUTTING AMORPHOUS METAL BY CRYSTALLIZATION WITH A LASER OR ELECTRON BEAM

Theodore R. Haller, Schenectady; Marshall G. Jones, Scotia; Gerald B. Kliman, Schenectady, and Russell E. Tompkins, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,538
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 EH **13 Claims**



1. A method of cutting thin amorphous metal sheet material comprising the steps of:

temporarily non-contact heating local regions of said amorphous metal sheet above its crystallization temperature without melting the material to form crystalline lines within the amorphous metal which has a non-crystalline structure; and

mechanically deforming said amorphous metal sheet to produce fractures along said crystalline lines and separate a burrless lamination with the desired shape.

4,328,412

MOTOR-DRIVEN WELDING MACHINE

Toshihiko Watanabe, Kamakura; Naoki Takenouchi, Chicasaki; Mitsurou Soga, and Kouji Kawakami, both of Kamakura, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

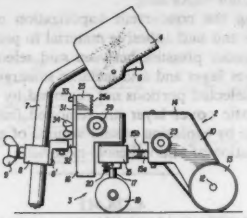
Filed Feb. 29, 1980, Ser. No. 125,904
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—125.1 **10 Claims**

1. A motor-driven welding machine comprising:

a welding torch including a grip means and a nozzle pipe attached to said grip means;

a carriage means having a torch mounting portion pivotally

attached to a drive portion wherein said carriage has front and rear wheels provided in front and rear portions of said carriage means at least either said front or rear wheel being driven by a motor and said torch mounting portion being horizontally pivotable in order to permit said torch to rotate in a horizontal plane;



an adjusting mechanism for locating the center of said grip means of said welding torch at a position intermediate between said front and rear wheels by an extensible means for varying the distance between said front and rear wheels; and

a holder member for holding said welding torch in position on said welding machine.

4,328,413

ODOMETER

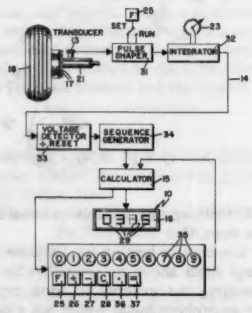
Richard J. O'Neil, 17 Winthrop St., West Boylston, Mass. 01583, and Francis P. Dunigan, 134 Lovell St., Holden, Mass. 01520

Continuation of Ser. No. 91,572, Nov. 7, 1979, abandoned, which is a continuation of Ser. No. 909,805, May 26, 1978, abandoned.

This application Dec. 1, 1980, Ser. No. 211,676

Int. Cl.[3] G06M *3/14*; G06F *15/20*

U.S. Cl. 235—92 DN **1 Claim**



1. Odometer for use with a vehicle, comprising: a pickup including a transducer for generating a first series of electrical pulses indicative of the rate of travel of the vehicle, the pickup including permanent magnets attached to a rotating part of the vehicle, said transducer being attached to non-rotating part of the vehicle adjacent the magnets, transmitting means for receiving said first series of pulses and for transmitting a second series of pulses indicative of the rate of travel of the vehicle in response to said first series, said transmitting means including a capacitor connected to receive said first series of pulses, a variable resistor connected to the capacitor to regulate the rate that the capacitor charges in response to said first series of pulses, and charge sensing means connected to the capacitor to generate a pulse of said second series each time a predetermined charge level is reached by the capacitor, calculating means with a memory and connected to the transmitting means to receive said second series of pulses, a set switch to interrupt the second series of pulses on occuasion, an ADD switch, a SUBTRACT switch, a visual readout, the readout being in the form of light emitting diodes, connected to the calculating means to show the mileage the vehicle has gone based on the second series of pulses, the mileage shown being adjustable by means of the ADD and SUBTRACT switches, a CLEAR switch to reduce the mileage stored in the memory and readout to ZERO and the numbered keys for setting a selected mileage in memory and introducing it to the calculating means and the readout simultaneously.

4,328,414

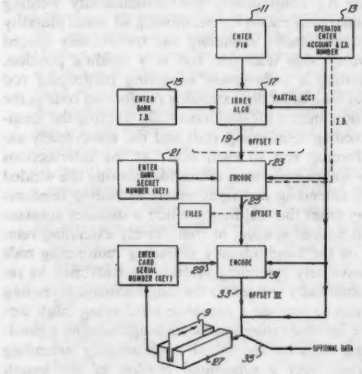
MULTILEVEL SECURITY APPARATUS AND METHOD

Martin M. Atalla, Atherton, Calif., assignor to Atalla Technovations, San Jose, Calif.

Filed Dec. 11, 1979, Ser. No. 102,858

Int. Cl.[3] G06K *7/00*

U.S. Cl. 235—380 **3 Claims**



1. Method of encoding each of a plurality of cards assigned to individuals by an entity, where each card includes a unique card code, the method comprising the steps of:

combining in accordance with a first logical encoding combination a secret code received from an individual and an identifying code assigned to the individual to produce an initial offset code;

combining in accordance with a second logical encoding combination a secret code received from the entity and a code indicative of the initial offset code to produce an auxiliary offset code;

detecting the card code of the one card assigned to the individual;

combining in accordance with a third logical encoding combination the auxiliary offset code and the card code to produce an output offset code; and

encoding the card with a detectable code that is representative of at least the output offset code.

4,328,415

CARD AND CARD READER SYSTEM

Douglas J. Eaton, St. Leonards on Sea, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 17, 1980, Ser. No. 140,456

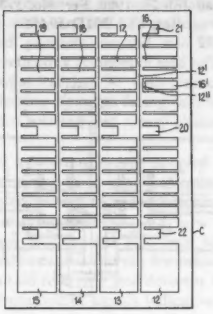
Claims priority, application United Kingdom, Apr. 17, 1979, 13223/79

Int. Cl.[3] G06K *7/08*

U.S. Cl. 235—451 **16 Claims**

1. A card reading system comprising: a card reader having a plurality of first conductive areas thereon arranged to co-operate with a plurality of second conductive areas on said card being read to form a plurality of capacitive couplings, said

second conductive areas being positioned at spaced locations along a conductive leg connected to a driven electrode on the card, said driven electrode being arranged to be capacitatively coupled to a driving electrode on the reader for charging said capacitive couplings, said locations corresponding to said first conductive areas, said second conductive areas being in a condition selected from present and connected to the leg, present and disconnected from the leg, and absent, according



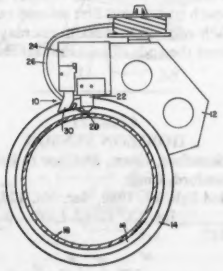
to the desired configuration in accordance with which information is encoded on said card, and test means including at least one of said second conductive areas and the corresponding co-operating first conductive area said test means forming a test capacitive coupling whereby a reference level is set against which the output values of said first conductive areas are compared to enable said card reader to read the information encoded in said card.

4,328,416

SEAM TRACKER FOR AUTOMATIC WELDER

Jerry E. Dudley, New Orleans, and Carrol G. Thornton, Slidell, both of La., assignors to J. Ray McDermott & Co., Inc., New Orleans, La.

Filed Nov. 1, 1979, Ser. No. 90,297
Int. Cl.³ B23K 1/00
U.S. Cl. 250—202 **18 Claims**



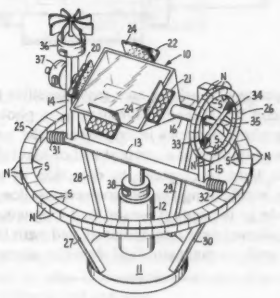
1. A welding system for welding along a weld seam, comprising:
- a welding torch;
- a drive mechanism for advancing the welding torch along the weld seam;
- a controllable lateral torch drive mechanism for driving the welding torch laterally of the weld seam;
- means for producing reflected electromagnetic radiation from the weld seam in an unimaged spatial distribution having an optical center of power functionally related to the lateral positioning of the welding torch relative to the weld seam; and
- means for sensing a shift in position of the optical center of power of the reflected electromagnetic radiation produced by a variation in the spatial distribution of the reflected radiation resulting from lateral deviation of the welding torch relative to the weld seam and producing a control input to the lateral torch drive mechanism in response thereto.

4,328,417

SOLAR TRACKING MECHANISM

Roger Himes, 2000 Lucas Valley Rd., San Rafael, Calif. 94903

Filed Jul. 21, 1980, Ser. No. 170,525
Int. Cl.³ G01J 1/20
U.S. Cl. 250—203 R **4 Claims**



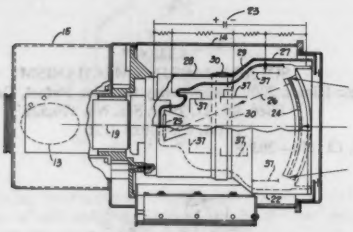
1. A solar tracking mechanism comprising:
- light response means comprising four batteries of photo voltaic cells, a first battery of cells being focused for sensing light to the right of the sun, a second battery of cells being focused for sensing light to the left of the sun, a third battery of cells being focused for sensing light below the sun, and a fourth battery of cells being focused for sensing light above the sun;
- means for mounting said light sensitive means for pivotal rotation upon a pair of mutually perpendicular axes, one of said pair of axes being vertical and fixed, the other axis being mounted for pivotal rotation upon the fixed axis;
- means for rotating said light sensitive means upon said vertical and fixed axis comprising a first ring of permanent magnets having a common polarity on the inside and the opposite polarity on the outside, said first ring being mounted in a horizontal plane coaxial relative to said vertical and fixed axis, and a first pair of coils disposed within said first ring and mounted for pivotal rotation within said first ring upon said vertical and fixed axis;
- means for rotating said light sensitive means upon said other axis comprising a second ring of permanent magnets having a common polarity on the inside and the opposite polarity on the outside, said second ring being mounted in a vertical plane coaxial relative to said other axis and movable therewith, a second pair of coils disposed within said second ring and mounted for pivotal rotation within said second ring; and
- means electrically connecting said first and second pairs of coils with said light responsive means, said first pair of coils being rotated within said first ring when either said first or second battery of cells receives light from the sun, said second pair of coils being rotated within said second ring when either said third or fourth battery of cells receives light from the sun.

4,328,418

MAGNETIC FIELD CORRECTION METHOD AND APPARATUS

Hugh T. Morgan, Lyndhurst, and Walter Glatz, Walton Hills, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed Apr. 10, 1980, Ser. No. 138,821
Int. Cl.³ H01J *31/50*
U.S. Cl. 250—213 VT **14 Claims**



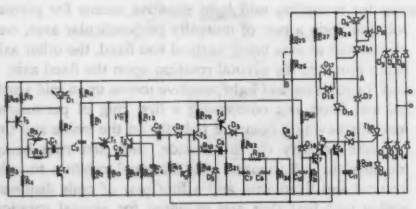
1. Apparatus comprising an x-ray intensifier tube including an input end for receiving x-radiation, a photo cathode for producing photoelectrons in response to the x-radiation, output means positioned at an output end of said tube for producing visible light in response to detection of said electrons, means for accelerating the photoelectrons along a path from the cathode to the output means, and magnetic field altering means positioned near a midpoint of said path to provide substantially uniform magnetic field densities along said path.

4,328,419

PHOTO-ELECTRIC DETECTOR WITH TEMPERATURE-COMPENSATED CIRCUIT

Marcel Lefebvre, Angouleme, France, assignor to La Telemecanique Electrique, France

Filed May 22, 1980, Ser. No. 152,250
Claims priority, application France, May 25, 1979, 79 13316
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 R **7 Claims**



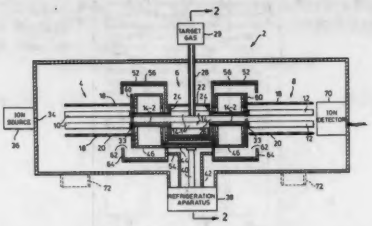
1. In a photo-electric detector of the presence of an object, of the kind comprising an electro-luminescent diode excited by an emitter circuit and coupled to a photo-electric receiver, a circuit for integrating the current delivered by the receiver, a thyristor switching means, controlled by the integrated current, a utilisation means, the switching means being connected to the terminals of non-filtered rectified current of a diode bridge connected to the sector by means of the utilisation means, and the emitter circuit being constituted by a monostable multivibrator comprising two transistors of complementary types the base of the first of which is coupled to the collector of the second by a resistance capacity time constant circuit, the improvement that the said time constant circuit comprises a resistance with negative temperature coefficient of value such that the product of the said time constant, by the gain of the first transistor, shall be substantially independent of temperature.

4,328,420

TANDEM MASS SPECTROMETER WITH OPEN STRUCTURE AC-ONLY ROD SECTIONS, AND METHOD OF OPERATING A MASS SPECTROMETER SYSTEM

John B. French, 4 Thornbank Rd., Thornhill, Ontario, Canada

Filed Jul. 28, 1980, Ser. No. 173,217
Int. Cl.³ B01D *59/44*
U.S. Cl. 250—282 **17 Claims**



16. A method operating a mass spectrometer system for analyzing ions, comprising:

(a) introducing said ions from a gaseous region into a vacuum chamber through an orifice in said chamber, said orifice communicating with said chamber,

(b) maintaining a vacuum in said chamber and maintaining a gas in said gaseous region at a higher pressure so that said gas passes through said orifice with said ions and expands into said chamber,

(c) directing said ions and at least some of said gas into a first set of spectrometer rods and directing said ions from said first set of spectrometer rods into a second set of spectrometer rods for mass filtering in said second set of rods,

(d) applying essentially an AC-only voltage to said first set of rods and both AC and DC voltages to said second set of rods, so that said first set of rods acts to guide said ions into said second set of rods,

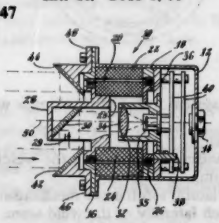
(e) and directing at least some of said gas which enters the space between the rods of said first set through openings formed in each rod of said first set and extending laterally through such rods so that such gas may escape laterally from between the rods of said first set through said openings.

4,328,421

HORIZON SENSOR

Gerald Falbel, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Feb. 25, 1980, Ser. No. 124,429
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—347 **12 Claims**



1. A horizon sensor for indicating orientation by sensing a line of discontinuity in optical radiation in a field of view between a reference body and outer space in at least two planes using a single sensor comprising:

detector means positioned on the optical axis of said sensor for detecting said optical radiation and generating detector signals in accordance with the intensity of said optical radiation,

scanning means having a scanning axis of rotation which coincides with said optical axis for scanning said line of discontinuity in at least two planes and applying said optical radiation to said detector means,

said scanning means having a rotary reflecting element with at least two stationary reflecting elements mounted in predetermined positions around said rotary reflecting element, the reflecting surfaces of said reflective elements being disposed at less than 90° with respect to said optical axis, said reflecting elements facing said body,

driving means for rotating said rotary element of said scanning means,

reference signal generating means coupled to said driving means and being driven in synchronization therewith for generating reference signals at predetermined points in the scan of said scanning means,

electronic means having said reference signals and said detector signals coupled thereto for measuring the intervals between said reference and detector signals and providing therefrom output signals indicative of the attitude of said horizon sensor in two mutually perpendicular axes with respect to said reference body.

4,328,422

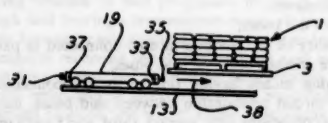
AUTOMATED WAREHOUSE VEHICLE POSITION DETERMINING SYSTEM

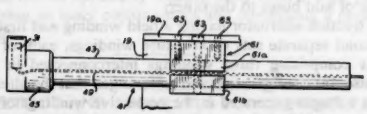
Weston R. Loomer, Walton, Ky., assignor to Litton Systems, Inc., Florence, Ky.

Continuation of Ser. No. 73,184, Sep. 7, 1979, abandoned, which is a division of Ser. No. 890,219, Mar. 27, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 235,211

Int. Cl.³ H01J *5/02*

U.S. Cl. 250—239 **8 Claims**





1. A vehicle position determining system comprising:

a vehicle arranged for movement along a path in a warehouse in which articles are stored;

sensor means coupled to said vehicle and arranged to respond to the alignment of said sensor means with a preselected one of said stored articles;

means flexibly coupling said sensor means to said vehicle; and

support means fixedly connected to said vehicle and supporting said flexible coupling means,

wherein said coupling means is movable relative to said support means thereby permitting the distance between said sensor means and said vehicle to be selectively varied.

4,328,423

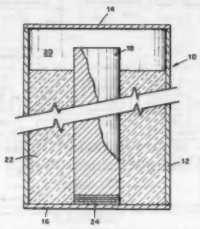
CANISTER ARRANGEMENT FOR STORING RADIOACTIVE WASTE

Donald K. Lorenzo, Knoxville, and John E. Van Cleve, Jr., Kingston, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 23, 1980, Ser. No. 143,060

Int. Cl.³ C09K *3/00, 11/04;* G21F *5/00*

U.S. Cl. 250—506 **5 Claims**



1. A canister arrangement for jointly storing radioactive heat-producing metallic and chemical waste, comprising a cylindrical shell, closure means at opposite ends of said shell for closing the latter, a solid cylinder of radioactive waste metal disposed in said shell in coaxial relationship with the longitudinal axis thereof, the waste metal cylinder being longitudinally spaced from said closure means and radially inwardly spaced from said shell to define an annulus therebetween, and an annular solid body of vitreous material and chemical waste disposed in said annulus in contacting relationship with said shell and said waste metal cylinder.

4,328,424

IONIZATION DETECTOR CHAMBER

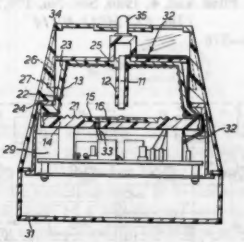
Dennis R. O'Connor, Rochdale, England, assignor to Chloride, Incorporated, Tampa, Fla.

Continuation of Ser. No. 810,889, Nov. 14, 1978. This application Jul. 18, 1979, Ser. No. 58,613

Claims priority, application United Kingdom, Jul. 2, 1976, 27668/76; Sep. 20, 1976, 38825/76

Int. Cl.³ G01T *1/18*

U.S. Cl. 250—384 **9 Claims**

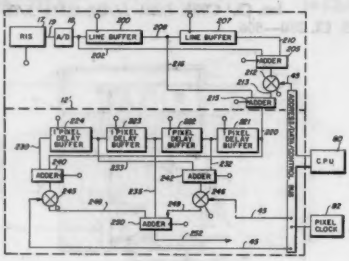


1. A detector including an ionization chamber having a first electrode comprising a rod extending into the chamber and terminating at a free end, a shielding sleeve disposed about the entire length of the rod except for the extreme portion of the free end, a measuring electrode disposed closely adjacent the free end of the rod and a second electrode disposed further away from the first electrode and the measuring electrode that the measuring electrode is spaced from the first electrode, and an ionization source in said chamber.

4,328,425
FILTER FOR IMAGE PIXELS

James C. Stoffel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 4, 1980, Ser. No. 174,778
Int. Cl.[3] H01J *40/14*
U.S. Cl. 250—578 4 Claims



1. A two-dimensional finite impulse response filter for filtering image pixels with minimal processing steps, comprising, in combination:

(a) first and second filter sections in series for filtering image pixels in the Y and X directions in succession,

(b) said first filter section including

(1) at least one pixel line storage buffer;

(2) adder means;

(3) buses coupling the input and output of said line storage buffer to said adder means; and

(4) multiplier means in at least one of said buses for multiplying pixels in said bus by a predetermined filter factor;

(c) said second filter section receiving partially filtered pixels from said first filter section and including

(1) plural one pixel delay buffers in series;

(2) second adder means;

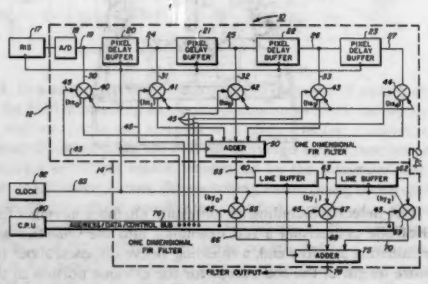
(3) second buses coupling the input and outputs of said one pixel delay buffers to said second adder means; and

(4) second multiplier means in at least one of said second buses for multiplying pixels in said second bus by a predetermined filter factor.

4,328,426
FILTER FOR IMAGE PIXELS

Remo J. D'Ortenzio, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 4, 1980, Ser. No. 174,777
Int. Cl.[3] H01J *40/14*
U.S. Cl. 250—578 5 Claims



1. A two-dimensional finite impulse response filter for filtering image pixels with minimal pixel processing steps, comprising, in combination:

first and second sections for filtering image pixels, the output of said first section being input to said second section so that said image pixels are filtered successively to provide filtered pixels at the output of said second section;

said first and second sections including:

(a) a buffer series for receiving and temporarily storing image pixels to be filtered;

(b) adder means for summing discrete pixel inputs to provide a totalized output;

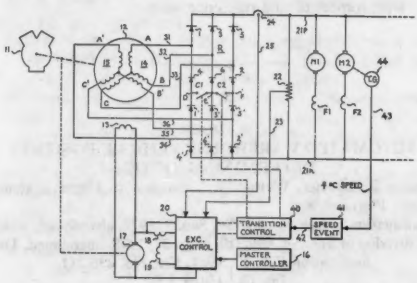
(c) pixel buses coupling input/output ports of individual buffers in said buffer series to said adder means whereby to input pixels from buffers in said buffer series to said adder means; and

(d) multiplier means in at least one of said pixel buses for multiplying pixels input to said adder means by a predetermined filter factor.

4,328,427
SMOOTH SERIES PARALLEL TRANSITION FOR DUAL WINDING TRACTION ALTERNATOR

Paul A. Bond, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jul. 7, 1980, Ser. No. 166,622
Int. Cl.[3] B60L *11/06*
U.S. Cl. 290—3 12 Claims



1. In combination:

(a) a pair of d-c buses;

(b) a plurality of d-c traction motors connected in parallel with one another between said buses;

(c) rectifying means having three legs interconnected in parallel circuit relationship between said buses, each of said legs comprising first, second, third, and fourth unilaterally conducting devices connected in series with one another and polled to conduct current in a direction from one of said buses to the other;

(d) a traction alternator having a field winding and first and second separate sets of armature windings, each of said sets comprising three windings interconnected in a 3-phase star configuration and so arranged that the alternating voltages generated in the respective windings of said first set will be substantially in phase with the alternating voltages generated in the corresponding windings of said second set;

(e) means for connecting the windings of said first set to the respective legs of said rectifying means at points between the first and second devices thereof and for correspondingly connecting the windings of said second set to the respective legs of said rectifying means at points between the third and fourth devices thereof, whereby said first and second sets of windings are effectively connected in parallel between said buses;

(f) first and second switching means respectively connected between the juncture of the second and third devices in one of said legs and the corresponding junctures of the second and third devices in the other legs of said rectifying means, each of said switching means having an open

circuit state and a closed circuit state, said first and second sets of windings being effectively connected in series between said buses when both of said switching means are in their closed circuit states;

(g) means for producing alternative up and down transition command signals; and

(h) means for actuating said switching means between said open and closed circuit states, said actuating means being operative in response to the production of said up transition command signal for causing said first and second switching means to close in sequence and being operative in response to the production of said down transition command signal for causing said first and second switching means to open in sequence.

4,328,428

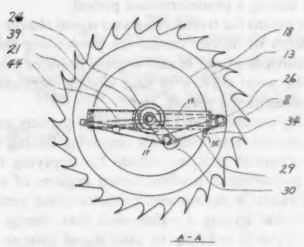
WINDSPINNER FARADAY PRINCIPLE ELECTRICITY GENERATOR

James R. McGovern, 205 E. 239th St., Bronx, N.Y. 10470

Filed Aug. 7, 1979, Ser. No. 52,854

Int. Cl.³ F03D *9/00*

U.S. Cl. 290—55 **3 Claims**



1. A wind actuated electric power generation apparatus comprising wind actuated propulsion means including an outer surface with radially disposed vanes, an inner surface including means for transmitting fluid motion to an electrical generation apparatus, end surfaces including centrally located bearings allowing rotation of said propulsion means, a shaft passing through said bearings, transmission means disposed in an enclosure formed by said inner surface and said end surfaces, and transmission receiving input motion from said inner surface transmitting means and outputting two rotation motions of opposite sense, and an electric generator receiving said opposite sensed motions, the improvement comprising structuring the generator as a Faraday Principle electric generator consisting essentially of an inner rotating mass containing metallic copper and an oppositely rotating outer mass at least partially enclosing an inner rotating mass and comprising a permanent magnet.

4,328,429

METHOD AND APPARATUS FOR CONTROLLING INVERTERS IN PARALLEL OPERATION

Christian Kublick, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,081

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904786

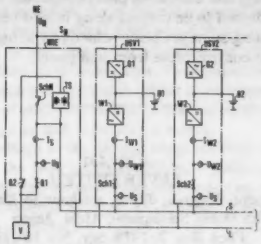
Int. Cl.³ H02N *3/46*

U.S. Cl. 307—58 **22 Claims**

16. Apparatus for controlling the voltage and load distribution as well as synchronizing several inverters, the outputs of which can be connected to a common bus bar comprising:

(a) means for forming a simulated control variable $U_{Wi}' = U_{Wi} + \Delta I_i \cdot Z_{xi}$ for each inverter, and

(b) means for comparing the amplitude and phase of the simulated control variable U_{Wi}' with a reference voltage U_{soll} which is the same for all inverters to develop a command for controlling each inverter, where U_{Wi} is the output voltage of inverter (W_i), ΔI_i is the deviation of the



output current I_{Wi} of the converter from a reference current $I_{soll\ i}$, and Z_{xi} is a complex impedance.

4,328,430

APPARATUS FOR ACTUATING ELECTRICAL LOAD-SEPARATING SWITCHES IN AN ELECTRICITY SUPPLY NETWORK

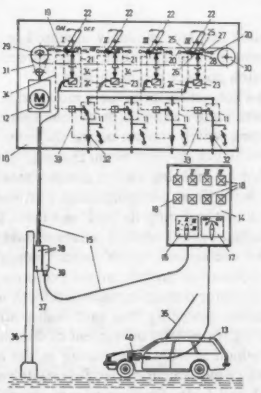
Arnold Efinger, Trossingen; Erwin Moser, Karlsruhe-Rüppurt, and Egon Wessing, Münster, all of Fed. Rep. of Germany, assignors to Wickmann-Werke Boblingen GmbH, Boblingen, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,606

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914199

Int. Cl.³ H01H *33/00*

U.S. Cl. 307—114 **4 Claims**



1. An apparatus for actuating electrical load-separating switches in an alternating current electricity-supply network of high voltage, each of said switches having a manual actuation lever for non-remote switching off or on to said network inside a dangerous inner area of a transformer and/or distributor station also having a non-dangerous outer area as well as being provided in combination with a maintenance-service vehicle, said apparatus comprising:

an auto battery of a maintenance-service vehicle installed and carried along therewith as a direct current source of low voltage in addition to the network of high voltage;

an electrical actuating motor operatively connected to at least one of said switches and capable of being supplied with operating current from said auto battery;

a remote control cable which leads from said motor to the non-dangerous outer area of said transformer and/or distributor station and which is provided with a plug

connector adapted to receive a plug which can be carried along in said vehicle; and

a switching and indicating panel connected to said plug and also adapted to be carried along in said vehicle, said load-separating switches being selectively actuatable over said remote control cable from said panel.

4,328,431

LEVER SWITCH

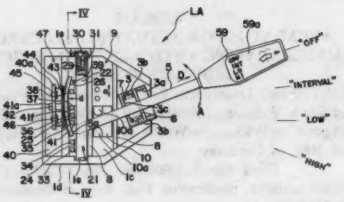
Susumu Usami, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Dec. 7, 1979, Ser. No. 101,247

Claims priority, application Japan, Dec. 9, 1978, 53-170418[U]; Jan. 25, 1979, 54-8334[U]

Int. Cl.³ H01H *3/16*

U.S. Cl. 307—10 R **8 Claims**



1. A lever actuated switch means for use in an automobile comprising:

a casing;

a first switch actuator movably mounted in said casing for movement back and forth in a first direction and having first switch contact means thereon;

a second switch actuator movably mounted in said casing for movement back and forth in a second direction and having second switch contact means thereon;

further first switch contact means in a wall of said casing and contacted by said first switch contact means on said first switch actuator at predetermined positions of said first switch actuator during its back and forth movement;

further second switch contact means in said wall and contacted by said second switch contact means of said second switch actuator at predetermined positions of said second switch actuator during its back and forth movement; and

a lever means extending into said casing and mounted on said casing for pivotal movement of the end of said lever means which is within the casing in the back and forth direction of movement of said first switch actuator and in the back and forth direction of movement of said second switch actuator, a portion of the length of said lever means which is within said casing being engaged with the respective first and second switch actuators for moving said switch actuators in the respective back and forth movements corresponding pivotal movement of said lever means, said lever means being further mounted in said casing for movement in the axial direction of said lever; and

a third switch actuator movably mounted in said casing for movement in the axial direction of said lever means and engaged by the free end of said lever means in said casing and having a third switch contact means thereon, and a further third switch contact means on said wall and extending into said casing and spaced from said third switch contact means for being contacted by said third switch contact means when said lever means is moved in the direction of the axis thereof into said casing.

4,328,432

ANTI-BLOOMING CHARGE TRANSFER DEVICE

Hiroshi Yamazaki, Ebina, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 59,749, Jul. 23, 1979, abandoned. This application Jan. 14, 1981, Ser. No. 225,185

Claims priority, application Japan, Jul. 26, 1978, 53-91265

Int. Cl.³ G11C *19/28*; H03K *3/42*; H01L *29/78, 27/14*

U.S. Cl. 307—221 D **8 Claims**

1. A charge transfer device comprising:

(a) a semiconductor substrate of a first conductivity type;

(b) storage means having a number of storing portions separately provided on said substrate for storing signal charge carriers during a predetermined period;

(c) transfer means for transferring said signal charge carriers;

(d) a plurality of barrier means for preventing said signal charge carriers stored in said storing portions from being moved between certain of said storing portions during said predetermined period; and

(e) means for removing an excess charge carriers exceeding a fixed amount, said means for removing having first and second potential applying means for applying first and second potentials at predetermined regions of said substrate alternately during said predetermined period, said first potential having a value such that charge carriers having opposite polarity to said signal charge carriers which will be recombined with charges trapped at surface states are induced on a surface of said substrate, and said second potential having a value such that said excess charge carriers are trapped by said surface states, said first and second potentials being applied a plurality of times during said predetermined period sufficient to remove said excess charge carriers.

4,328,433

PROXIMITY SWITCH

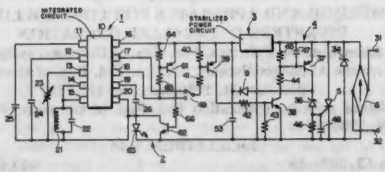
Hisatoshi Nodera; Hiroyuki Yamasaki; Hiroyuki Miyamoto, and Kenji Ueda, all of Nagakakyo, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 18, 1979, Ser. No. 76,770

Claims priority, application Japan, Dec. 28, 1978, 53-161907

Int. Cl.³ H03K *3/26*; G08B *13/18*

U.S. Cl. 307—311 **2 Claims**



1. A proximity switch with two connecting wires for switching an alternating current, comprising:

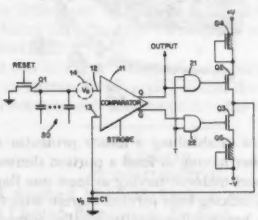
a rectifying circuit;
a thyristor for switching an alternating load current connected across output terminals of said rectifying circuit;
a stabilized power circuit connected across the output terminals of said rectifying circuit;
a detecting means;
a detecting circuit receiving a power supply from said stabilized power circuit and producing an output signal in response to the presence of an object in the vicinity of said detecting means; and
a trigger circuit for triggering said thyristor in response to said output signal, wherein said trigger circuit includes a transistor and a Zener diode connected in series between the anode and gate electrodes of said thyristor, said trigger circuit transistor being operable in response to the output signal from said detecting circuit, and further wherein a light-emitting semiconductor device is connected in series with said detecting circuit and a bypass transistor is connected to said light-emitting semiconductor device in parallel for bypassing the current which flows through the switch in response to the triggering of said thyristor by the output signal from said detecting circuit.

4,328,434

COMPARATOR CIRCUIT WITH OFFSET CORRECTION

William L. Geller, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 16, 1979, Ser. No. 95,136
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—359 **5 Claims**



1. A comparator circuit corrected for offset including in combination

comparator means having first and second input terminals and being operable to produce a first output signal when the voltage at the first input terminal plus the offset voltage of the comparator means is greater than the voltage at the second input terminal and to produce a second output signal when the voltage at the second input terminal is greater than the voltage at the first input terminal plus the offset voltage;

first input means for periodically connecting the first input terminal to a first point of reference potential during a continuous succession of reset periods;

capacitance means connected between the second input terminal and a second point of reference potential;

incrementing means coupled to said comparator means and to said capacitance means for adding a predetermined fixed increment of electrical charge to the electrical charge in said capacitance means in response to said first output signal from the comparator means during each reset period in which the comparator means is producing said first output signal while the first input terminal is connected to the first point of reference potential, the predetermined fixed increments of electrical charge being equal for each reset period in which a predetermined fixed increment of electrical charge is added to the electrical charge in said capacitance means; and

decrementing means coupled to said comparator means and to said capacitance means for subtracting a predetermined fixed increment of electrical charge from the electrical charge in said capacitance means in response to said second output signal from the comparator means during each reset period in which the comparator means is producing said second output signal while the first input terminal is connected to the first point of reference potential, the predetermined fixed increments of electrical charge being equal for each reset period in which a predetermined fixed increment of electrical charge is subtracted from the electrical charge in said capacitance means;

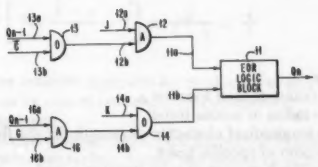
whereby the voltage at the second input terminal approaches the voltage at the first point of reference potential plus the offset voltage by the incrementing means adding a predetermined fixed increment of electrical charge to the electrical charge in said capacitance means or by the decrementing means subtracting a predetermined fixed increment of electrical charge from the electrical charge in said capacitance means during each reset period.

4,328,435

DYNAMICALLY SWITCHABLE LOGIC BLOCK FOR JK/EOR FUNCTIONS

Jerry R. Case, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,323
Int. Cl.³ H03K *19/21, 19/088, 19/173*
U.S. Cl. 307—466 **7 Claims**



1. A logic circuit for performing a J-K function and an Exclusive OR (EOR) function comprising in combination:

a cross-coupled transistor-transistor logic EOR block having two data inputs and a data output Qn;

means for supplying the first input of said EOR block with the K signal input logically ORed with an X signal; and

means for supplying the second input of said EOR block with the J signal input logically ANDed with a Y signal; where

K and J are the data inputs;

X is the logical AND of a Qn−1 signal and a G signal;

Y is the logical OR of the Qn−1 signal and an inverted G signal,

Qn−1 is the stored state of the previous data output signal; and

the G signal is a control signal which enables the J-K function, and the inverted G signal enables the EOR function.

4,328,436

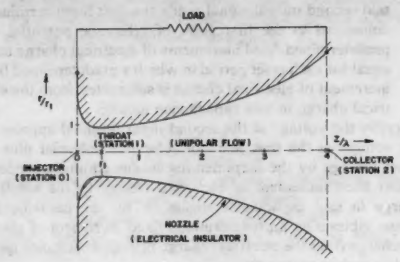
OPTIMALLY LOADED ELECTROHYDRODYNAMIC POWER GENERATOR

Oscar Biblarz, and Theodore H. Gawain, both of Carmel, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 10, 1980, Ser. No. 128,593
Int. Cl.³ H02K *45/00*
U.S. Cl. 310—11 **1 Claim**

1. In an electrohydrodynamic power generator of the type having an injector located upstream of the input to a conversion channel for injecting charged particles into a fluid stream to form a charged aerosol flow through said conversion channel, a collector located downstream of said injector to remove said charged particles and an electric field impressed across

said conversion channel which opposes the fluid motion, the improvement being a converging-diverging conversion chan-



nel wherein the section of said channel downstream from the injector has the geometric shape defined by the pair of parametric equations:

$$\frac{r}{r_1} = \left[\frac{1+\frac{\gamma-1}{2}M^2}{\frac{\gamma+1}{2}}\right]^{\frac{(\gamma+1)}{2(\gamma-1)}} \frac{1}{\sqrt{M}} \text{ and}$$

$$\frac{z}{\lambda} = \frac{1}{\gamma-1}\ln\left[1+\frac{\gamma-1}{2}M^2\right]$$

where

r=radius at axial location z,

r_1=radius at nozzle throat,

λ=longitudinal characteristic length for the fluid stream,

γ=ratio of specific heats,

M=Mach number at axial location z, and

z=axial coordinate.

4,328,437

SUPERCONDUCTIVE EXCITER WINDING FOR A TURBOGENERATOR ROTOR

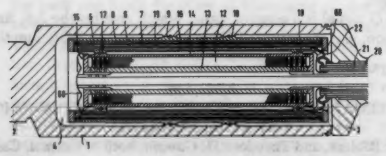
Lutz Intichar, Nuremberg; Heinrich Küter, Wattenscheid, and Erich Weghaupt, Mülheim, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Feb. 8, 1977, Ser. No. 766,723

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1976, 2605593

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **2 Claims**



1. In a turbogenerator rotor, a winding support cylinder coaxially mounted on the rotor and formed with axially extending slots distributed about the periphery thereof, said slots having a radially extending cross section, and a superconductive exciter winding having coils formed of a multiplicity of directly cooled mutually superimposed individual conductors fixed in said slots, each of said individual conductors being formed of superconductive material and having a rectangular cross section, the individual conductors of a respective coil located at the radially inner part of said slot having a greater cross section than the individual conductors disposed in the radially outer part of said slot, the individual conductors in the radially outer part of said slot being mutually superimposed on the longer sides of the rectangular cross section thereof, and the individual conductors in the radially inner part of said slot being mutually superimposed on the shorter sides of the rectangular cross section thereof, said slot having a stepped construction at the radially inner part thereof and having a smaller width thereat than at the radially outer part thereof.

4,328,438

HOLDER FOR OVERLOAD PROTECTOR

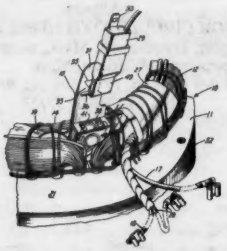
Charles T. Zolman, Zeeland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 347,073, Apr. 2, 1973, Pat. No. 4,250,419. This application Apr. 17, 1980, Ser. No. 140,964

The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.

Int. Cl.³ H02K *11/00*; H01B *17/00*

U.S. Cl. 310—68 R **4 Claims**



1. A member for establishing a motor protector receiving pocket, said member having at least a portion thereof formed from dielectric sheet material having at least one flap portion having a terminal locking hole formed therein with the terminal locking hole being substantially totally surrounded by dielectric sheet material; a section of said dielectric sheet material immediately adjacent to the terminal locking hole being intact except for being lanced along a line extending from the locking hole without the removal of sheet material from either side of such line; the sheet material immediately adjacent to both sides of the lanced line being yieldable to permit relative movement between a protector terminal and the locking hole along said line; the sheet material adjacent to the locking hole and on each side of said line forming locking ears for retaining a protector terminal trapped in the locking hole.

4,328,439

INDUCTIVE SIGNAL SOURCE FOR INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Karl-Heinz Adler, Leonberg; Adolf Fritz; Günter Brand, both of Stuttgart, and Eugen Kielbas, Rosswas, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 140,785

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917404

Int. Cl.³ F02P *1/00*

U.S. Cl. 310—70 R **7 Claims**

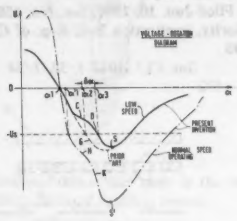
1. An inductive signal source in combination with an external ignition internal combustion engine to provide ignition trigger signals to the engine having

a stator (11);

a rotor (4);

an inductive coil (12) magnetically coupled to the stator and the rotor;

salient stator pole pieces (13) secured to the stator;
salient rotor pole pieces (14) secured to the rotor, said pole pieces being positioned relative to each other such that, upon rotation of the rotor, the rotor pole pieces pass adjacent the stator pole pieces at selected angular positions of the rotor and are positioned apart at other angular positions of the rotor to thereby change the magnetic flux passing through the inductive coil, and induce a voltage therein,
and wherein
the pole pieces are relatively shaped to induce a voltage in

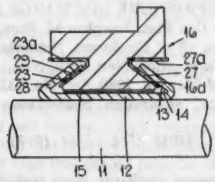


the coil (12) which, with respect to angular displacement of the rotor, has a half wave comprising
after passing through null, a portion (C) whose absolute value changes at a decreasing rate or differential, with respect to change in angular position, and further comprising a subsequent and adjacent portion (D) of increasing rate or differential, in absolute value with respect to angle of rotation until the peak value (S) of induced voltage is obtained; and
wherein the direction of the half wave between null and the peak value remains unvarying so that the sign of the differential between null and the peak value is unvarying.

4,328,440
COMMUTATOR

Michael J. Stafford, Lichfield, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 767,034, Feb. 9, 1977, Pat. No. 4,247,795. This application Apr. 25, 1980, Ser. No. 143,550
Claims priority, application United Kingdom, Feb. 20, 1976, 6721/76
The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.
Int. Cl.[3] H02K *13/00*
U.S. Cl. 310—233 **4 Claims**

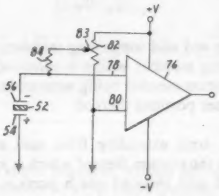


1. A commutator including a one-piece support sleeve having two axial ends, a plurality of commutator segments equiangularly spaced around the support sleeve, means for electrically insulating segments from one another, each of said segments having a base region of dove-tail form having its widest end presented to said sleeve, said one-piece support sleeve including a first retaining flange portion adjacent one of said axial ends thereof, said flange portion including means defining a first internal frusto-conical surface co-acting with a first inclined face of the base region of each of said segments for locating said segments axially and radially relative to said sleeve, and, said one piece support sleeve further including a second retaining flange portion adjacent the other axial end thereof, said second flange portion defining a second internal frusto-conical surface co-acting with a second inclined face of the base region of each of said segments whereby both the first retaining flange portion and the second retaining flange portion comprise means for locating said segments axially and radially relative to said support sleeve.

4,328,441
OUTPUT CIRCUIT FOR PIEZOELECTRIC POLYMER PRESSURE SENSOR

Frederick R. Kroeger, Jr., and Richard A. Norquist, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 31, 1980, Ser. No. 117,296
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—319 **10 Claims**



1. A pressure sensitive apparatus for producing an amplified electrical signal on one of two electrodes comprising:
an insulating layer;
two piezoelectric polymer films, each having one of said two electrodes on one surface thereof and having a conductive plane on the other surface thereof adapted to be connected to ground, one disposed on each side of said insulating layer with said electrodes in closest proximity to said insulating film; and
an electrical sensing circuit coupled to said one of said two electrodes and coupled to said conductive plane for amplifying one of said electrical signals, said conductive plane being utilized as signal ground;
said electrical sensing circuit being a high impedance interface to said one of said two electrodes which provides for an adjustable sensitivity;
said electrical sensing circuit having an MOS digital gate adapted to be powered from a power source having a voltage and a signal ground and having a signal input and a signal output, said signal input coupled to said one of said two electrodes; a first resistance coupled between said voltage and said signal ground and having an adjustable tap to bias said digital gate; and a second resistance coupled between said signal input and said adjustable tap to provide an adjustment of the bias of said digital gate.

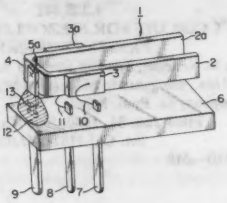
4,328,442
PIEZOELECTRICALLY DRIVEN TUNING FORK WITH DAMPING MEANS

Toshiharu Tanaka, Hirakata; Naoteru Tsuda, Katano, and Kazuhide Arase, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 30, 1979, Ser. No. 98,898
Claims priority, application Japan, Dec. 7, 1978, 53-169751[U]; Dec. 7, 1978, 53-169752[U]; Dec. 7, 1978, 53-169753[U]; Dec. 7, 1978, 53-169755[U]
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—326 **4 Claims**

1. A piezoelectric tuning fork comprising:
a terminal plate;

a supporting member erected on said terminal plate;
a tuning fork securely joined to said supporting member by welding or the like;
two piezoelectric transducers mounted on said tuning fork;
an input terminal and an output terminal mounted on said terminal plate;
lead wires interconnecting said piezoelectric transducers and said input and output terminals;
a vibration isolation or absorbing member surrounding said supporting member and securely fixed to both said terminal plate and said supporting member, the portion of said supporting member which is surrounded with the vibration isolation member being reduced in width as compared with other portions thereof;



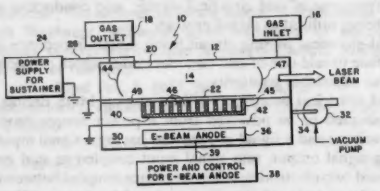
and
horizontal arms extending from said supporting member between the portion thereof which is joined to said tuning fork and said reduced-width portion thereof, said arms being supported on said terminal plate at the free end portions thereof by soft resilient members.

4,328,443

APPARATUS FOR PROVIDING IMPROVED CHARACTERISTICS OF A BROAD AREA ELECTRON BEAM

Oswald L. Zappa, Stoneham, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Mar. 11, 1980, Ser. No. 129,469
Int. Cl.³ H01J *33/02*; H01S *3/09*
U.S. Cl. 313—420 **11 Claims**



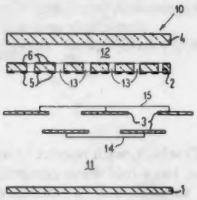
1. In an electron beam-sustainer device having means including two oppositely disposed walls defining a working region therebetween and through which a working gas is passed; means for generating and introducing into said working region a broad area stream of electrons through a thin foil disposed in one of said walls; and means including two electrodes spaced one from another for providing an electrical field across said working region traversed by said stream of electrons, the improvement comprising:
an electrically conductive shield member having a plurality of web portions spaced one from another to at least substantially define a plurality of openings, said shield member being disposed over said foil whereby said electron stream must pass through said foil and then through said openings to enter said working region, said web portions having a depth, size and spacing one from another whereby said shield member permits said stream of electrons passing through its said openings to traverse substantially only a predetermined volume in said working region.

4,328,444

GAS DISCHARGE DISPLAY DEVICE WITH A LAMELLAR LATTICE IN THE GAS DISCHARGE SPACE

Burkhard Littwin, Hohenschaeftlarn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 10, 1980, Ser. No. 158,119
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926393
Int. Cl.³ H01J *1/52, 1/54*
U.S. Cl. 313—492 **14 Claims**



1. In a gas discharge display device having a front and back plate sealed together to form a gas filled cavity, a control plate placed between the front and back plate to subdivide the gas filled cavity into a gas discharge space adjacent the back plate and a post acceleration space adjacent the front plate, said control plate having electrodes as parallel extending row conductors on one surface and parallel extending column conductors on the other surface, said row and column conductors forming a matrix of intersecting points with the plate having a perforation at each of said points, said front plate being provided with a luminescent screen having an anode layer and said back plate having more than one cathode mutually insulated from one another, the improvement comprises a lamellar lattice composed of a plurality of overlapping strips being arranged in the gas discharge space between the cathodes of the back plate and the control plate so that a direct path between the cathode to the control plate is obstructed.

4,328,445

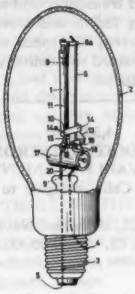
HIGH-PRESSURE DISCHARGE LAMP

Roger J. Q. Van Den Plas; Josephus M. Ruts, and Antonius J. G. C. Driessen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1980, Ser. No. 132,352
Claims priority, application Netherlands, Apr. 4, 1979, 7902634
Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—46 **6 Claims**

1. A high-pressure discharge lamp including a discharge vessel having an ionizable filling and at least two main electrodes between which the discharge is maintained in the operating condition of the lamp, said discharge vessel being provided with an auxiliary elongate external ignition means which near one end is connected to a bimetallic strip and in the operating condition of the lamp is connected electrically to one of the main electrodes only, the bimetallic strip being situated near the other main electrode and said auxiliary external ignition means in the inoperative condition of the lamp bearing against the discharge vessel over substantially its entire length, whereas in the operating condition of the lamp the auxiliary

ignition means is remote from the discharge vessel at least for the greater part due to the action of the bimetallic strip, characterized in that the said bimetallic strip is the only member moving the auxiliary external ignition means.

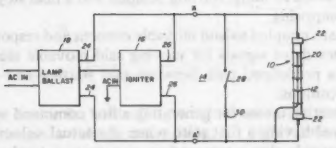


4,328,446

METHOD AND APPARATUS FOR STARTING HIGH INTENSITY DISCHARGE LAMPS

Charles N. Fallier, Jr., Westford, and Joseph M. Proud, Wellesley, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 11, 1980, Ser. No. 139,310
Int. Cl.[3] H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—47 **24 Claims**



1. A light source for use in conjunction with a lamp ballast which provides ac power and which includes an inductive output and an igniter which provides periodic pulses having an amplitude of 2500 to 4000 volts and a duration of at least one microsecond, and periodic pulses being substantially synchronized with peaks of the ac power, said light source comprising:

a high pressure discharge lamp including a discharge tube having electrodes sealed therein at opposite ends and enclosing a noble gas or mixtures thereof having a pressure of greater than 300 torr;

a conductor, coupled to one of said electrodes and located in close proximity to an outer surface of said discharge tube; and

pulsing means, having outputs coupled to said electrodes, for generating at said outputs a high voltage pulse having an amplitude about that of said periodic pulses and a duration much greater than that of said periodic pulses,

whereby, when said light source is coupled to the lamp ballast and to said igniter, said periodic pulses, said conductor, and said high voltage pulse are operative to initiate a discharge in said lamp.

18. A method for initiating discharge in a high pressure discharge lamp which receives ac power from a lamp ballast, said lamp comprising a discharge tube having electrodes sealed therein at opposite ends, said method comprising the steps of:

supplying to said electrodes periodic pulses having an amplitude of 2500 to 4000 volts and a duration of at least one microsecond, said periodic pulses being substantially synchronized with peaks of the ac power;

locating a conductor in close proximity to an outer surface of said discharge tube and coupling the conductor to one of said electrodes; and

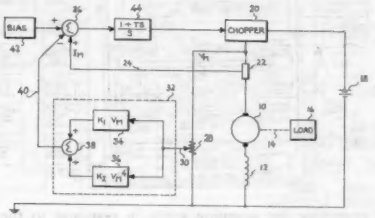
supplying to said electrodes a high voltage pulse having an amplitude about that of said periodic pulses and a duration much greater than that of said periodic pulses.

4,328,447

DC MOTOR SPEED REGULATOR

Richard K. Davis, and Joe C. Lambert, both of Charlottesville, Va., assignors to General Electric Company, Salem, Va.

Filed Jul. 29, 1980, Ser. No. 173,300
Int. Cl.[3] H02P *5/16*
U.S. Cl. 318—331 **3 Claims**



1. An open-loop speed regulator system for regulating the rotational speed of a rotor of a DC electric motor having series connected armature and field windings including controllable switching means for periodically interconnecting the motor and a DC source, said control system comprising:

(a) gating control means for controlling the duty factor of the switching means as a function of a current command signal, said gating control means being connected to supply periodic ON and OFF commands to the switching means for controlling said duty factor:

(b) means for generating a first signal representative of current in the motor;

(c) means for generating a second signal representative of terminal voltage appearing across the series combination of motor armature and field windings;

(d) function generator means for receiving said second signal and for generating a third signal having a magnitude which is a predetermined function of the magnitude of said second signal;

(e) means connected for summing said first signal and said third signal for generating said current command signal; and,

(f) means for coupling said current command signal to said gating control means.

4,328,448

METHOD FOR PROGRAMMABLY CONTROLLING THE SEQUENCE OF EXECUTION OF DATA BLOCKS IN A PROGRAM

John A. Berenberg; David M. Clabaugh, both of Cincinnati, and Ralph C. Taylor, Jr., West Chester, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sep. 2, 1980, Ser. No. 183,300
Int. Cl.[3] G05B *13/00*
U.S. Cl. 318—561 **12 Claims**

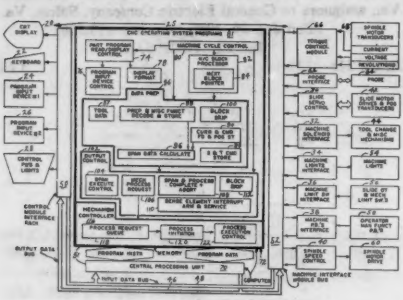
1. A method for detecting the presence of a workpiece characteristic and controlling the execution sequence of operational steps in a machining program being stored in a control connected to a machine, said machine having machine slides moving along axes of motion in response to the machining program to effect relative motion between a workpiece and a tool holder having a cutting tool and a sensing element selectively associated therewith, the method comprising the steps of:

(a) storing in association with the machining program

(1) first instructions for defining a scanning cycle to cause the sensing element to detect the presence of a workpiece characteristic,

(2) second instructions to test for the presence of the workpiece characteristic to determine the sequence of execution of subsequent operational steps in the machining program, and

(3) third instructions defining a nonsequential location in the machining program associated with a particular operational step;



(b) executing the scanning cycle in response to the first instruction to produce a condition signal having a first state in response to the sensing element detecting the workpiece characteristic and having a second state in response to a failure of the sensing element to detect the workpiece characteristic;

(c) testing the state of the condition signal in response to the second instructions; and

(d) controlling the sequence of execution of the operational steps in the machining program in response to the state of the condition signal and the third instructions.

4,328,449

DEVICE FOR CONTROLLING THE SPEED OF MOVEMENT OF A MOBILE MEMBER

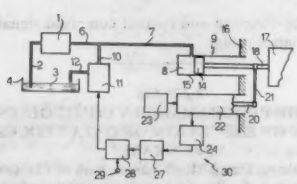
Mario Calligaris, Turin, Italy, assignor to Fratelli Sandretto S.p.A., Turin, Italy

Filed Dec. 13, 1979, Ser. No. 103,283

Claims priority, application Italy, Dec. 20, 1978, 69901 A/78

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—571 **4 Claims**



1. A device for controlling the speed of movement of a mobile member relative to a fixed support, comprising a drive means for moving said mobile member, said drive means comprising a constant flow rate feed source arranged to feed a pressurized fluid to a motion transmission member operatively connected to said mobile member, and at least one bleed valve arranged to bleed off a variable quantity of the pressurized fluid being fed to the motion transmission member, a speed transducer connected directly to said movable member and arranged to supply an electrical signal proportional to the speed of movement of said mobile member, comparison and processing means for receiving the electrical signal from said speed transducer, means for supplying to said comparison and processing means at least one electrical reference signal proportional to a predetermined value of the speed of said mobile member, said comparison and processing means generating an output signal proportional to the differences between the signal generated by said speed transducer and said reference signal, said output signal being fed to said bleed valve to vary the movement thereof, whereby the speed of movement of said mobile member is maintained substantially equal to the predetermined value of said speed.

4,328,450

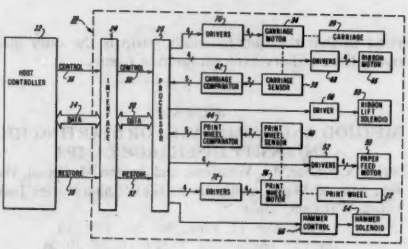
CLOSED LOOP VELOCITY CONTROL SYSTEM FOR A MOVABLE ELEMENT

Andrew Gabor, Alamo, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 22, 1980, Ser. No. 171,067

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **10 Claims**



1. Apparatus for controlling the movement of a movable element between an initial starting position and a final stopping position comprising:

drive means coupled to said movable element and responsive to motor drive signals for moving said movable element along a predefined path between said starting and stopping positions;

first generating means for generating a first command velocity signal having a first state when the actual velocity of said movable element exceeds a predetermined value and a second state when the actual velocity of said movable element is less than said predetermined value; and

second generating means coupled to said drive means for generating an actual velocity signal indicative of the actual speed of movement of said movable element;

third generating means responsive to a position signal indicative of the distance remaining to travel by said movable element toward said desired stopping position for generating second and third command velocity signals respectively indicative of the minimum and maximum desired velocity levels for such particular distance remaining to travel; and

control means for periodically sensing the state of said first command velocity signal when said movable element has less than a first predetermined distance and greater than a second predetermined distance to travel to said final stopping position, and for controlling the levels of said motor drive signals to cause (a) the acceleration of said movable element by said drive means when said first command velocity signal is sensed at its first state, and (b) the deceleration of said movable element by said drive means when said first command velocity signal is sensed at its second state, said control means being coupled to said second and third generating means and being responsive to said position signal for comparing said actual velocity signal with each of said second and third command velocity signals when the value of said position signal indicates the movable element has greater than said first predetermined distance to travel to said final stopping position, and for issuing said motor drive signals in response to such com-

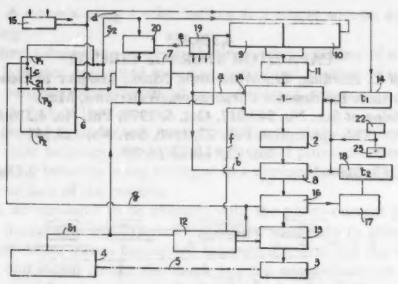
parison for application to said drive means to cause (c) the acceleration of said movable element by said drive means when the comparison indicates the actual velocity of said movable element is less than said minimum velocity, (d) the coasting of said movable element when the comparison indicates the actual velocity of said movable element is more than said minimum velocity and less than said maximum velocity, and (e) the deceleration of said movable element by said drive means when the comparison indicates the actual velocity of said movable element exceeds said maximum velocity.

4,328,451

DEVICE FOR CONTROLLING THE ELECTRIC DRIVE MOTOR OF A WINDOW RAISER IN PARTICULAR IN AN AUTOMOBILE VEHICLE

Jean A. Barge, Montbeliard, France, assignor to Aciers et Outillage Peugeot, Audincourt, France

Filed Jun. 25, 1980, Ser. No. 163,236
Claims priority, application France, Jun. 28, 1979, 79 16694
Int. Cl.³ G05B *11/18*
U.S. Cl. 318—596 **22 Claims**



1. A device for controlling window raisers, in particular for an automobile vehicle, comprising, for each window raiser to be controlled, an electric supply source, a control circuit connected to the supply source to control the supply source, an electric driving motor connected to said supply source, a selector connected to the control circuit and for ensuring the selective supply of current to the motor, in one direction or the other, through the control circuit, said supply source being capable of delivering at least two distinct energy levels and comprising for this purpose a control input and said control circuit comprises means for applying to said input an energy level control signal, said control signal producing, as a function of the position of said selector, the application of a torque to the motor when raising the window which is higher than the torque applied when descending the window.

4,328,452

MOTION CONTROL APPARATUS

Robert A. Ragen, Hayward, and Carl E. Herendeen, Danville, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 7, 1980, Ser. No. 166,221
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—685 **11 Claims**

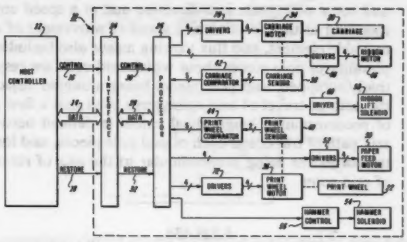
1. Apparatus for controlling the movement of a movable element between an initial starting position and a final stopping position comprising:

drive means coupled to said movable element and responsive to motor drive signals for moving said movable element along a predefined path between said starting and stopping positions;

first generating means coupled to said drive means for generating an actual velocity signal indicative of the actual speed of movement of said movable element;

second generating means responsive to a position signal indicative of the distance remaining to travel by said movable element toward said desired stopping position for generating first and second command velocity signals respectively indicative of the minimum and maximum desired velocity levels for such particular distance remaining to travel; and

control means coupled to said first and second generating means and responsive to said position signal for comparing said actual velocity signal with each of said first and second command velocity signals when the value of said



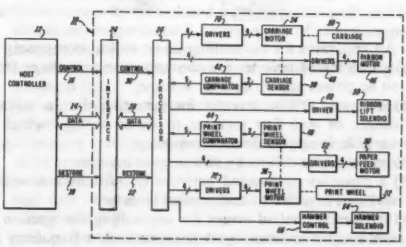
position signal indicates the movable element has greater than a predetermined distance to travel, and for issuing said motor drive signals in response to such comparison for application to said drive means to cause (a) the acceleration of said movable element by said drive means when the comparison indicates the actual velocity of said movable element is less than said minimum desired velocity, (b) the coasting of said movable element when the comparison indicates the actual velocity of said movable element is more than said minimum desired velocity and less than said maximum desired velocity, and (c) the deceleration of said movable element by said drive means when the comparison indicates the actual velocity of said movable element exceeds said maximum desired velocity.

4,328,453

MOTION SENSING APPARATUS

Michael G. Demeny, Fullerton; John C. G. Dunfield, San Jose, and Andrew Gabor, Alamo, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 23, 1980, Ser. No. 171,581
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—685 **8 Claims**



1. Apparatus responsive to the movement of a movable element for generating a plurality of electrically phase-displaced signals containing information indicative of the direction, speed and distance of movement of said movable element, said apparatus comprising:

a plurality of position-displaced electrically conductive coils;

flux producing means mounted adjacent each of said coils for producing a path of normally substantially constant magnetic flux adjacent each of said coils; and

flux varying means coupled to said movable element and responsive to the movement of said movable element for varying the level of said magnetic flux adjacent each of said coils in dependence upon the direction, speed and distance of movement of said movable element, whereby the resultant electromotive force induced in each of said coils defines said plurality of electrically phase-displaced signals, said flux varying means including a rotor having a plurality of spaced teeth about the periphery thereof, said rotor being coupled to said movable element such that said rotor will rotate in a direction and at a speed corresponding to the direction and speed of movement of said movable element, said flux varying means also including a plurality of pole pieces about which said coils are respectively wrapped, said pole pieces being mounted adjacent the path of travel of said rotor teeth such that a first gap of predetermined longitudinal extent is defined between said path of travel and each of said pole pieces, said longitudinal extent being perpendicular to the axis of rotation of said rotor.

4,328,454

APPARATUS FOR CONTROLLING AC MOTOR

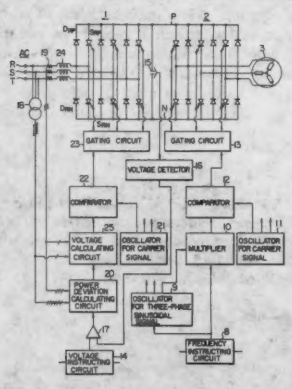
Toshiaki Okuyama, Ibaraki, and Hiroshi Nagase, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 7, 1980, Ser. No. 109,845

Claims priority, application Japan, Jan. 10, 1979, 54-667

Int. Cl.³ H02P *5/34*

U.S. Cl. 318—803 **3 Claims**



1. An apparatus for controlling an ac motor, comprising:

(a) a first PWM inverter for converting an ac voltage from an ac power supply to a dc voltage;

(b) a second PWM inverter for inverting the dc voltage output of said first inverter to an ac voltage which is variable in amplitude and frequency;

(c) an ac motor driven by said second inverter;

(d) a capacitor connected between dc circuits connecting said first inverter to said second inverter;

(e) frequency control means for controlling the ignition of said second inverter in accordance with a frequency instruction signal;

(f) power detector means for detecting an available power and a reactive power from said ac power supply;

(g) means for setting an amplitude of the reactive power at a point of detecting a power output from said ac power supply to a predetermined value;

(h) means for setting an amplitude of the voltage output of said dc circuits to a predetermined value;

(i) means for detecting the voltage output of said dc circuits;

(j) power control means for executing the ignition control of said first inverter, said ignition control including the steps of adjusting an input ac voltage component of said first inverter, which has a phase difference of 90° with respect to that of the output voltage of said ac power in accordance with a deviation between an instruction value and an actual value of said available power which correspond to a set value and an actual value of said dc circuit voltage, and also adjusting the input ac voltage component of said first inverter, which has the same phase as that of the output voltage of said ac power supply in accordance with a deviation between a set value and an actual value of said reactive power.

4,328,455

CAPACITOR STORAGE CIRCUIT

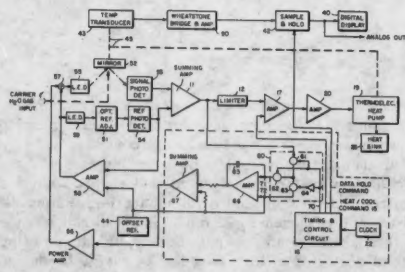
John C. Harding, Jr., Watertown, Mass., assignor to General Eastern Instruments Corporation, Watertown, Mass.

Division of Ser. No. 949,017, Oct. 6, 1978, Pat. No. 4,216,669.

This application Feb. 27, 1980, Ser. No. 125,141

Int. Cl.³ H02J *15/00*

U.S. Cl. 320—1 **2 Claims**



1. A circuit for the storage of a change on a capacitor comprising,

an operational amplifier having a first and second differential inputs,

a capacitor connected between the first input and the output of said amplifier,

a reference voltage source connected to the second input,

a first and second switch connected at one end to said first and second inputs, respectively,

a third switch connected at one end to the other end of said first and second switches,

a signal voltage source connected to the other end of said third switch,

means for simultaneously closing said first and third switches and opening said second switch to cause said capacitor to achieve a voltage across it equal to the difference of said signal source voltage and said reference voltage,

means for simultaneously opening said first and third switches and closing said second switch to maintain the voltage across said capacitor irrespective of change in the signal source voltage.

4,328,456

CAMERA WITH SOLAR BATTERIES CONNECTED IN SERIES OR PARALLEL

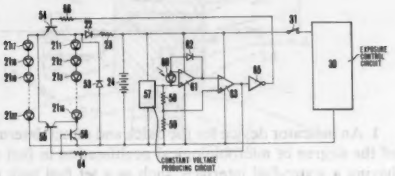
Ryoichi Suzuki, Kawasaki, and Takashi Uchiyama, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,550

Claims priority, application Japan, Feb. 24, 1978, 53/20656; Feb. 24, 1978, 53/20657; Apr. 7, 1978, 53/41027; Apr. 7, 1978, 53/41028

Int. Cl.³ H02J *7/00, 15/00*

U.S. Cl. 320—7 **7 Claims**



1. A camera using a solar battery as a power source, comprising:

a first solar battery group including a plural number of solar batteries connected in series, said plural number of solar batteries being arranged in a dispersed manner on the surface of the camera;

a second solar battery group including a plural number of solar batteries connected in series, said plural number of solar batteries being arranged in a dispesed manner on the surface of the camera;

an accumulator to be charged with the photo-current produced with the first and the second solar battery groups;

non-return means connected between the first and the second means on the one hand, and the accumulator on the other hand, to prevent back current flow from the accumulator;

light measuring means connected to the accumulator, said means producing a signal corresponding to the brightness;

signal producing means for producing a signal corresponding to the voltage of the accumulator as a standard signal;

brightness detection means connected to the accumulator, said means comparing the output signal from the light measuring means with the standard signal from the signal producing means to produce a first signal when the output signal from the light measuring means is higher than the standard signal and a second signal when the output signal from the light measuring means is lower than the standard signal; and

change-over means for controlling the serial-parallel connection change-over of the first and second solar battery groups, said means connecting the first and the second solar battery groups in parallel when the first signal is applied and in series when the second signal is applied.

4,328,457

FULL CHARGE DETECTION CIRCUIT FOR A BATTERY

Yoshio Higuchi, Shijonawate, Japan, assignor to Daito Sound Co., Ltd., Daitoh, Japan

Filed May 8, 1980, Ser. No. 147,821

Int. Cl.³ H02J *7/04*

U.S. Cl. 320—36 **10 Claims**

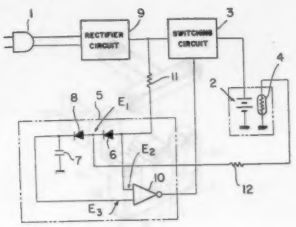
1. In an automatic battery charging circuit connected to a source of direct current, comprising:

switch means to connect and disconnect a battery to be charged to said direct current source;

reference circuit means connected to said direct current source to provide first and second electrical reference values derived from said direct current source, comprising;

temperature responsive electrical impedance means in heat-exchanging relationship to said battery and being connected to said direct current source to provide a first electrical reference value which varies in response to changes in battery temperature;

electrical storage means connected to said direct current source in parallel with said temperature responsive means to establish a second electrical reference value when charging of a battery is initiated and to maintain said value during charging independently of a change in the first electrical reference value;



comparison circuit means including input means connected to sense each of said first and second electrical reference values and having output means connected to said switch means;

said switch means being responsive to a signal from the output means of said comparison circuit means to connect the battery to said source of direct current so long as both of said reference values remain substantially constant during charging, and to disconnect the battery in response to a variation in said first reference value upon completion of charging.

4,328,458

VARIABLE LEAKAGE TRANSFORMER AND CONTROL CIRCUIT THEREFORE

Hirayama Hiromitsu, Funabashi, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 884,953, Mar. 9, 1978, Pat. No. 4,213,084, and a continuation-in-part of Ser. No. 81,339, Oct. 3, 1979, which is a continuation-in-part of Ser. No. 884,953,. This application Dec. 4, 1979, Ser. No. 100,011

Claims priority, application Japan, May 20, 1977, 52-57749; May 26, 1977, 52-66946[U]; Jun. 30, 1977, 52-85426[U]; Mar. 14, 1978, 53-140209[U]; Mar. 14, 1978, 53-140210[U]

Int. Cl.³ G05F *1/20*

U.S. Cl. 323—251 **11 Claims**

1. A variable leakage transformer, comprising:

a ferrite core with (i) a closed main magnetic path and (ii) a closed sub-magnetic path having a pair of closed magnetic loops with a common leg,

the main magnetic path having a portion including said common leg;

a primary winding adapted to be coupled to an input power source,

said primary winding having a first primary winding portion and a second primary winding portion connected in series with each other,

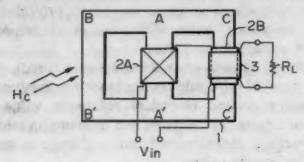
said first primary winding portion being wound on said common leg,

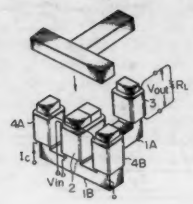
said second primary winding portion being wound on another part of the main magnetic path;

a secondary winding wound on said other part of said main magnetic path in closely coupled magnetic relationship with said second primary winding portion and adapted to be connected to a load; and

a pair of control windings each wound on one of said closed

magnetic loops of said sub-magnetic path remote from said common leg, said control windings being connected in series with each other, the control windings being





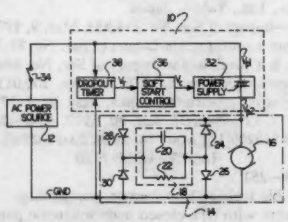
adapted to be connected to an input DC power source to control the magnetic flux in said sub-magnetic path and in said common leg portion of said main magnetic path.

4,328,459

CURRENT INRUSH LIMITING APPARATUS

Fenwick R. McLeod, Jr., Prospect Heights, Ill., assignor to TRW Inc., Cleveland, Ohio

Filed Sep. 4, 1980, Ser. No. 181,372
Int. Cl.[3] G05F *5/00*
U.S. Cl. 323—300 **8 Claims**



1. Apparatus for transmitting power from a power source to a load, comprising:

first means for controlling the level of power transmitted to said load from said power source, including means for soft starting the transmission of power to said load, upon initial turn-on of said power source, by initially transmitting power at a low level and thereafter gradually increasing the level of transmitted power to a higher level said soft starting means being responsive to a reset signal to completely reset the soft start function; and

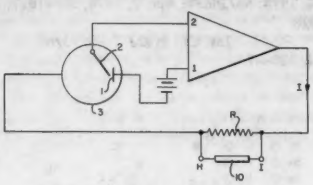
second means for providing said reset signal to said soft starting means only if the power provided by said power source drops out for in excess of a predetermined interval of time whereby when power thereafter returns the transmission of power to said load is again soft started at said low level.

4,328,460

INSTRUMENT INDICATOR OF THE PROLIFERATION MAGNITUDE IN A TANK

Blanca M. R. de Maybaum, Corrientes 2885, Piso 8° Dtc., 76 Buenos Aires, Argentina

Filed Dec. 4, 1979, Ser. No. 100,181
Int. Cl.[3] G01R *27/14*
U.S. Cl. 324—64 **1 Claim**



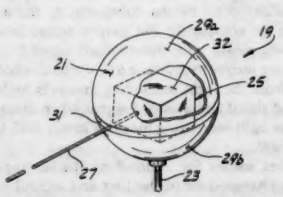
1. An indicator device for the quick and direct determination of the degree of microbiological proliferation in fuel systems having a water-fuel interface, such as a jet fuel tank particularly adapted for being visually inspected by the pilot or by a maintenance crew on the ground; characterized by a trielectrodic plug comprising a work electrode (1), a reference electrode (2) and a counter electrode (3), completed by a DC source and an operational amplifier, which defines a potentiostatic circuit, including an electric resistance through which is connected, as a shunt, an instrument sensitive to the electric current, whose field of measurement is divided into three zones, corresponding to three different degrees of proliferation: Q=normal, R=incipient and S=dangerous.

4,328,461

APPARATUS FOR AND METHOD OF MEASURING A HIGH VOLTAGE ELECTRIC FIELD

William G. Butters, Florissant, and Joseph E. Lee, St. Ann, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jul. 2, 1979, Ser. No. 54,005
Int. Cl.[3] G01N *31/02*
U.S. Cl. 324—72 **12 Claims**



1. Apparatus for measuring a high voltage electric field comprising a pair of electrodes in an electric field to be measured, dielectric means supporting said electrodes within said electric field substantially free of the effects of the surroundings on the electric field proximate said electrodes, said electrodes being electrically separate from one another, means connected to said electrodes for sensing the electric potential of said field, means for generating an output signal indicative of said electric field being sensed, said sensing means and said generating means being effectively shielded from the electric field by said electrodes, means for receiving said signal located remote from said generating means so as to have substantially no effect on said field adjacent said apparatus, and non-electrically conductive means for transmitting said signal from said generating means to said remote receiving means.

4,328,462

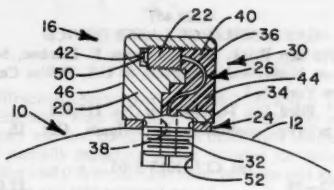
EROSION PROBE HAVING INDUCTANCE SENSOR FOR MONITORING EROSION OF A TURBOMACHINE COMPONENT

Richard C. Jensen, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 958,294, Nov. 6, 1978, abandoned. This application May 12, 1981, Ser. No. 262,853

Int. Cl.[3] G01R *33/12*; G01B *7/10*; G01N *17/00*

U.S. Cl. 324—229 9 Claims



1. An erosion probe for monitoring erosion of a component of a turbomachine by a fluid flow therepast comprising:

a shell having a predetermined erosion rate proportional to the erosion rate of the component;

means attached to said shell for releasably securing the shell to the turbomachine in the fluid flow path in proximity to said component;

an electric inductance sensor secured within the shell for generating an electric signal indicative of shell erosion;

means encapsulating the sensor within the shell for isolating the sensor from the fluid flow; and

means connected to said sensor for transmitting the electric signal from the sensor to a remote location.

4,328,463

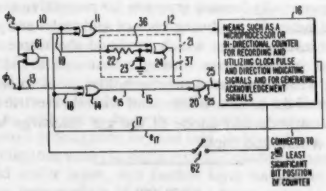
ENCODER FOR RECORDING INCREMENTAL CHANGES

Jeremiah Y. Avins, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,348

Int. Cl.[3] H03K *5/22*

U.S. Cl. 328—133 6 Claims


MEANS SUCH AS A MICROPROCESSOR OR BI-DIRECTIONAL COUNTER FOR RECORDING AND UTILIZING CLOCK PULSE AND DIRECTION INDICATING SIGNALS AND FOR GENERATING ACKNOWLEDGEMENT SIGNALS
CONNECTED TO LEAST SIGNIFICANT BIT POSITION OF COUNTER

1. A circuit for detecting leading or lagging phase relationship between first and second two level input signals at each level transition of said first and second signals and comprising:

first and second voltage comparing means each having first and second input terminal means and output terminal means and each responsive to signals of equal and non-equal levels supplied to the first and second input terminal means thereof to produce an output signal having high and low levels, respectively;

first means for supplying said first and second input signals to the first input terminal means of said first and second voltage comparing means, respectively;

second means responsive to said first input signal to produce an output pulse of a given polarity level at each level transition of said first input signal;

logic means responsive to the output signals of said first and second voltage comparing means and to the output pulses from said second means to determine the phase relationship of said first and second input signals at each level transition of said first and second input signals; and

said logic means including acknowledgment signal generating means for generating and supplying to said second input terminal means of said first and second voltage comparing means, in response to each determination of phase relationship and in response to each level transition of said second input signal only an acknowledgment signal whose level is equal to the level of said second input signal and whose duration remains until after the next level transition of said second input signal occurs and the next level of the acknowledgment signal begins.

4,328,464

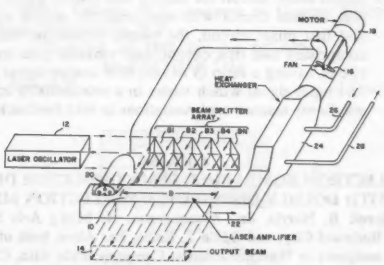
HIGH POWER METALLIC HALIDE LASER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Thomas J. Pivirotto, La Canada, Calif.

Filed Feb. 7, 1980, Ser. No. 119,339

Int. Cl.[3] H01S *3/05*, *3/097*

U.S. Cl. 330—4.3 6 Claims



1. A laser amplification system comprising:

a metallic halide laser amplifier having input means for receiving a laser beam;

a heat exchanger;

means for flowing a metallic halide and a buffer gas through said laser amplifier and said heat exchanger whereby the temperature of said metallic halide and said buffer gas within said laser amplifier is maintained between predetermined temperature limits; and

a molecular dissociation means located at an input to said laser amplifier for converting said metallic halide into metallic atoms and ions and halide atoms and ions comprised of;

a hollow cathode tube array in fluid communication with said laser amplifier;

a conductive material shaped as an annular ring defining an aperture spaced apart from and electrically isolated from one end of said hollow cathode tube; and

means for applying a positive voltage differential between said conductive material and said hollow cathode tube whereby said metallic halide becomes dissociated as it flows through said hollow cathode tube and said aperture.

4,328,465

TONE CONTROL CIRCUIT UTILIZING VARIABLE GAIN AMPLIFIER

Saburo Takaoka; Ryozi Higashi, and Hiroyuki Hirano, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

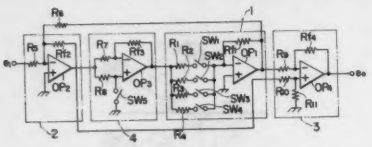
Filed Sep. 24, 1979, Ser. No. 78,269

Claims priority, application Japan, Sep. 26, 1978, 53-118265; Sep. 26, 1978, 53-118266; Sep. 26, 1978, 53-118267

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.³ H03G *3/00, 5/00*

U.S. Cl. 330—151 8 Claims



1. A variable gain amplifier circuit for receiving a first input signal and providing a first output signal, said circuit comprising:

a gain control circuit having a feedback ratio x and comprising an operational amplifier circuit with a feedback loop and means for varying the feedback ratio of said operational amplifier in accordance with a predetermined control signal for varying the gain thereof;

a first mixer circuit for mixing said first input signal with an output signal of said gain control circuit and for coupling the resultant output signal to a signal input of said gain control circuit; and

a second mixer circuit for mixing said output signal of said gain control circuit with said resultant output signal of said first mixer circuit, the output of said second mixer comprising said first output, said variable gain amplifier circuit having a ratio G of said first output signal to said first input signal which varies in a substantially logarithmic linear manner with variations in said feedback ratio.

4,328,466

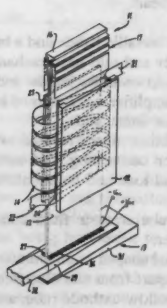
ELECTRON BOMBARDED SEMICONDUCTOR DEVICE WITH DOUBLY-DISTRIBUTED DEFLECTION MEANS

Carroll B. Norris, Jr., Albuquerque, N. Mex.; Aris Silzars, Redwood City, and David J. Bates, Los Altos, both of Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.

Filed Jul. 3, 1972, Ser. No. 269,504

Int. Cl.³ H03F *3/08*

U.S. Cl. 330—308 26 Claims



1. An electron bombarded device comprising an evacuated envelope, an electron gun positioned in said envelope, said gun serving to form and project a sheet electron beam with a predetermined velocity, a target spaced from said electron gun to receive said beam, doubly-distributed beam deflection means adapted to receive an input signal disposed between said electron gun and said target in cooperative relationship with said beam to deflect the beam in accordance with said input signal, said deflection means serving to propagate the input signal across said sheet beam at a predetermined velocity and along said sheet beam at said predetermined velocity to interact with and deflect the electrons in the beam in accordance with the input signal.

4,328,467

GAS DISCHARGE LASER DEVICE

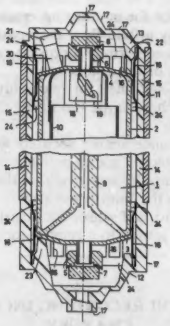
Hans G. van den Brink, and Theodorus F. Lamboo, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 14, 1980, Ser. No. 111,621

Claims priority, application Netherlands, Oct. 15, 1979, 7907597

Int. Cl.³ H01S *3/05*

U.S. Cl. 372—98 12 Claims



1. A gas discharge laser device comprising a cylindrical discharge vessel containing a gas including an active lasing medium and mounted coaxially in a metal tubular holder, the cylindrical discharge vessel being sealed at each of its two ends by means of respective sealed metal end plates provided with respective centrally located supports for respective multilayer reflectors, means for centering each of said metal end plates in respective insulator caps which surround the respective end plates, said insulator caps having a first cylindrical surface extending within the metal tubular holder so as to engage at least a part of the tubular holder, and wherein electric connections to a cathode and anode of the gas discharge laser are provided within said caps.

4,328,468

MULTIPASS LASER OPTICS FOR LIGHT DEFLECTOR

John A. Krawczak, Hopkins, and Ernest J. Torok, Minneapolis, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 16, 1980, Ser. No. 112,509

Int. Cl.³ H01S *3/082*

U.S. Cl. 372—97 17 Claims

1. A multipass optic system, comprising:

a resonant cavity comprising;

a first reflecting mirror of substantially 100% reflectivity, and

a partially reflecting mirror;

an antiresonant cavity comprising;

said partially reflecting mirror,

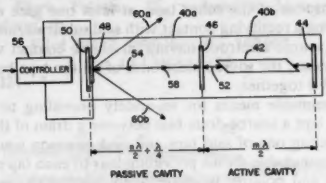
a Faraday effect diffraction grating, and

a second reflecting mirror of substantially 100% reflectivity on the far side of said diffraction grating;

a light beam source oriented within said resonant cavity;

said partially reflecting mirror oriented for optically coupling said light beam from said resonant cavity to said antiresonant cavity;

means coupled to said diffraction grating for varying the



diffraction characteristics of said diffraction grating for generating from said light beam a single 0'th order light beam and two congruent 1'st order light beams and

said partially reflecting mirror oriented for optically coupling said 0'th order light beam between said antiresonant cavity and said resonant cavity.

4,328,469

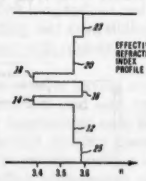
HIGH OUTPUT POWER INJECTION LASERS

Donald R. Scifres, Los Altos; Robert D. Burnham, and William Streifer, both of Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 3,312, Jan. 15, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,311

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 **26 Claims**



1. In an injection laser having an active layer of narrow bandgap and high refractive index for guided optical wave propagation, said laser including at least one cladding layer contiguous with one surface of said active layer and having a substantially lower index of refraction compared to said active layer, said cladding layer of very thin cross-sectional thickness, the minimum thickness being sufficient to confine injected carriers to said active layer but permitting extension of the optical wave propagation beyond said cladding layer, a further layer contiguous with the surface of said cladding layer remote from said active layer, said further layer having an index of refraction intermediate of said active layer and said cladding layer and chosen to be lower than the equivalent refractive index of the fundamental mode of the guided optical wave.

4,328,470

PULSE MODULATED IMPATT DIODE MODULATOR

Jon H. Bumgardner, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1980, Ser. No. 149,057

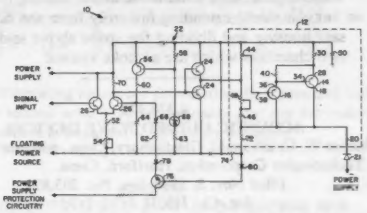
Int. Cl.³ H03K *7/08*

U.S. Cl. 332—9 T **10 Claims**

1. A modulator circuit for modulating a microwave oscillator having a negative resistance device which derives power from a power supply, the modulator circuit being controlled by a modulator signal fed from a signal source and comprising:

a switchable device having an input, an output and a gate lead, the output providing a current source of predetermined output impedance connected to the negative resistance device for providing power thereto, the switchable device having a switchable conductive state and a switchable open state as controlled by signal fed to the gate lead;

feedback means connected to the output for changing the predetermined output impedance for matching characteristics of the negative resistance device;



current controlling the limiting means connected to the input for limiting current provided by the current source to the negative resistance device when the switchable device is in the conductive state; and

circuit means connected to the gate for controlling the switchable states of the switchable device and providing impedance transformation between the gate and the signal source.

4,328,471

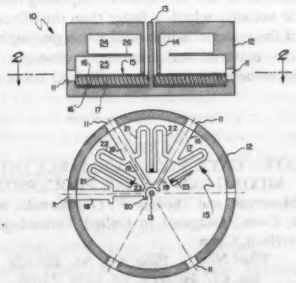
BANDWIDTH COMPENSATED QUARTER-WAVE COUPLED POWER COMBINER

John P. Quine, Colonie, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,469

Int. Cl.³ H01P *5/16*

U.S. Cl. 333—128 **2 Claims**



1. An improved microwave power combiner/divider comprising:

a metal housing having at its center a coaxial transmission line comprised of a grounded center conductor and a cylindrical shield, and having a circular side wall with equally spaced holes that are peripheral ports;

a planar microwave integrated circuit disk retained within said housing which couples microwave energy between every peripheral port and said coaxial line;

said disk having a dielectric substrate and a metallization pattern including outer radial microstrip lines with a given characteristic impedance; an inner approximately quarter-wavelength radial micropstrip line which is connected to every such outer line and provides an impedance match for the desired mode having zero phase difference be-

tween adjacent peripheral ports; and a pair of half-wavelength microstrip lines bridging the ends of every adjacent pair of quarter-wavelength lines and connecting to resistance means for absorbing undesired mode power which has a 180° phase difference at adjacent peripheral ports, said half-wavelength lines providing an impedance match for the undesired mode and bandwidth compensation for the desired mode; the aforesaid quarter and half wavelengths being a midband; and

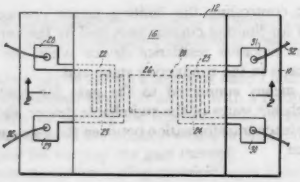
an annular shield extending inwardly from the side wall of said housing and dividing the space above said disk into two chambers which are a choke system.

4,328,472

ACOUSTIC GUIDED WAVE DEVICES

Thomas W. Grudkowski, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 3, 1980, Ser. No. 203,821
Int. Cl.³ H03H *9/36, 9/13*
U.S. Cl. 333—141 **10 Claims**



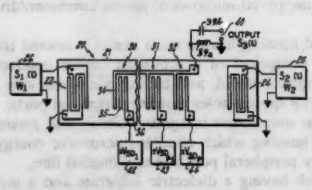
1. An acoustic wave device including piezoelectric material and electrically conductive transducer elements disposed in proximity therewith to provide acoustoelectric coupling with said device, characterized by an acoustic wave guiding volume having a thickness which is at least a significant fraction of a wavelength of an acoustic wave in said device, said wave guiding volume being disposed between two acoustic wave half spaces, each of said half spaces comprising material having an acoustic velocity which is faster than the effective acoustic velocity of the material within said wave guiding volume, said piezoelectric material and transducer elements disposed to provide acoustoelectric coupling with said wave guiding volume.

4,328,473

ISOLATED GATE, PROGRAMMABLE INTERNAL MIXING SAW SIGNAL PROCESSOR

Gary K. Montress, and Thomas W. Grudkowski, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 3, 1980, Ser. No. 203,179
Int. Cl.³ H03H *9/64, 9/76, 15/00*
U.S. Cl. 333—154 **2 Claims**



1. A surface acoustic wave signal processor employing programmable internal product mixer efficiency, comprising:

a piezoelectric and semiconductive substrate;

means for launching a pair of acoustoelectric waves in said substrate along a propagation path adjacent to a surface of said substrate;

a plurality of taps disposed on said surface along said propagation path, each of said taps including at least one drain electrode having an ohmic contact with said substrate, the drain electrodes of each tap being isolated from the drain electrodes of the other taps, at least one gate electrode having a rectifying contact with said substrate, and at least one source electrode having an ohmic contact with said substrate, the source electrodes of all the taps being connected together;

programmable means for separately providing to each of said taps a source-drain bias between a drain of the corresponding one of said taps and said common source, said programmable means providing bias to each tap of amplitude and polarity to respectively control the amplitude and phase of the mixer efficiency of nonlinear product mixing of said waves in the region of said substrate contiguous with such tap; and

output means associated with said taps for extracting from each of said taps a component of product mixing occurring at such tap;

characterized by:

the gate electrodes of each tap being ohmically isolated; and

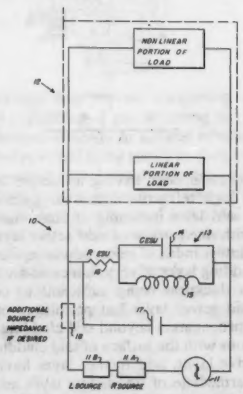
said output means comprising an RF coupling to said common source.

4,328,474

ELECTRICAL ENERGY STORAGE TYPE FILTER

James P. Goodman, Annapolis, and David B. Boswell, Arnold, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1980, Ser. No. 115,831
Int. Cl.³ H03H *7/01, 7/06;* **H02J** *3/01*
U.S. Cl. 333—176 **3 Claims**



1. A filter circuit for use in an alternating current power circuit or system for attenuating unwanted distortion components, transient components, and nonharmonically related electrical components originating either in the source or in the load comprising:

one or more resonant tank circuits, each having an inductance and a capacitance in parallel and tuned at or near the fundamental frequency of the power circuit;

a shorting capacitor in parallel with the tank circuit across the power circuit to pass the high frequency harmonics;

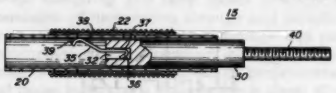
a resistance having an ohmic value of usually between 5 and 50% of the impedance value of either the inductance or the capacitance of the tank circuit at the fundamental frequency and connected in series with each of the tank circuits; and

said tank circuits and said resistor being connected across the power source in parallel with the load.

4,328,475
TUNING CORE APPARATUS

Alfred J. Clark, Palatine, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jun. 2, 1980, Ser. No. 155,902
Int. Cl.³ H03J 5/32
U.S. Cl. 334—7 **6 Claims**



1. An improved vibration-resistant tuning core apparatus adaptable for use in radio receivers with pushbutton tuners, comprising in combination:

at least a single tubular coil form member having an inductance coil wound therearound, said coil form member having an interior surface forming an inner diameter of said coil form member,

a cylindrical tuning core member, having a longitudinal axis, disposed within said coil form member and coil for axial sliding movement with respect thereto, said cylindrical tuning core member having an outer diameter sufficiently less than the inner diameter of said coil form member interior surface so as to prevent a sliding friction fit therebetween,

a receiver tuning core carriage having a drive shaft fixed to and supporting a first longitudinal end of said tuning core member for providing said axial sliding movement of said tuning core member with respect to said coil form member, and

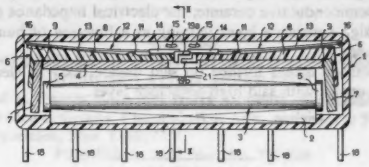
an elongated flexible member having one end portion fixed to a second longitudinal end said tuning core member opposite said first longitudinal end, and an opposite end portion of said flexible member extending towards and abutting against the interior surface of said tubular coil form member to effect compression of said flexible member and provide a predetermined resistance to lateral (radial) movement of said tuning core member relative to said form member and coil thereby permitting axial sliding movement of said tuning core member relative to the coil form member and coil during the tuning operation while minimizing side-to-side movement of said tuning core member relative to the coil form member and coil at other times to minimize the effect of vibrations which give rise to undesirable microphonics, said flexible member also providing support to said tuning core member at said second longitudinal end of said tuning core member.

4,328,476
ELECTROMAGNETIC RELAY HAVING TWO SYNCHRONIZED ARMATURES

Raymond Bernier, 29 Ave. Foch, 94300 Vincennes, France

Filed Dec. 16, 1980, Ser. No. 217,184
Claims priority, application France, Feb. 12, 1980, 80 03054
Int. Cl.³ H01H 9/24
U.S. Cl. 335—128 **5 Claims**

1. An electromagnetic relay placed within a casing and comprising a coil provided with an axial core forming a magnetic circuit with a yoke disposed in parallel relation to the coil and with two movable magnetic armatures each adapted to cooperate with one end of the core, each armature being adapted to actuate at least one movable contact which cooperates with at least one stationary contact, wherein each armature is designed substantially in the shape of an "L", a first arm of said "L" being constituted by a magnetic armature plate located transversely with respect to the coil and the second arm of said "L" being adapted to extend along the yoke, and

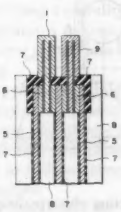


wherein cooperating means are provided at the respective ends of the two second arms in order to ensure that any movement of one armature is imparted to the other armature.

4,328,477
GAS DETECTING ELEMENT AND PROCESS FOR PRODUCING THE SAME

Akio Takami; Tsutomu Saito, and Kazutoshi Tanaka, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Apr. 14, 1980, Ser. No. 139,626
Claims priority, application Japan, Apr. 12, 1979, 54-45186
Int. Cl.³ H01L 7/00
U.S. Cl. 338—34 **9 Claims**

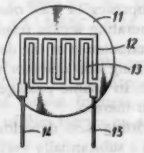


1. A gas detecting element comprising a semiconductor wafer comprising primarily a transition-metal oxide, an electrode layer bonded to both sides of the wafer, a protective layer disposed on the surface of each electrode layer, a metal lead wire coupled to each electrode layer by an electrically conductive adhesive, a region at which said metal lead wire is bonded to said electrode layer being reinforced by an insulating adhesive covering said region.

4,328,478
HUMIDITY SENSITIVE DEVICE

Michihiro Murata, Kyoto, and Shinsei Okabe, Takatsuki, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 8, 1980, Ser. No. 184,802
Claims priority, application Japan, Sep. 11, 1979, 54/116916
Int. Cl.³ G01W 1/02
U.S. Cl. 338—35 **24 Claims**



1. A humidity sensitive device, comprising:

a device body comprising a semiconductive ceramic, said semiconductive ceramic having a grain boundary;

a high resistance layer formed in said grain boundary of said semiconductive ceramic, the electrical impedance of said high resistance layer varying as a function of humidity; and

electrode means formed on said device body in electrical contact with said high resistance layer.

4,328,479

INSTALLATION FOR DETECTING ANOMALIES IN INFLATING OF THE TIRES OF A GUIDED VEHICLE

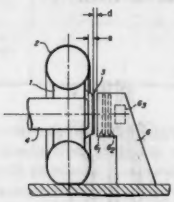
Philippe Van den Broek, Versailles; Rene Gaudu, Bois D'Arcy, and Paul Carrier, Velizy, all of France, assignors to MATRA, A French Society, Paris, France

Filed Jun. 25, 1979, Ser. No. 51,899

Claims priority, application France, Jun. 26, 1978, 78 19057

Int. Cl.³ B60C *23/02*; G08B *19/00*

U.S. Cl. 340—58 **8 Claims**



1. A system for detecting abnormalities in the inflation level of the tire of a vehicle, comprising:

a coil of metallic wire,

means supporting the coil of metallic wire to the vehicle wheel which in turn supports the tire to be monitored,

said means supporting the coil adapted to hold the coil in a substantially vertical plane spaced from the wheel and the hub thereof a distance on the order of several centimeters so as to reduce the pertubation caused by the metallic masses of the hub and the rim,

a contactor associated with the tire and wheel including means for monitoring tire pressure and switch means responsive to said means for monitoring tire pressure for coupling and uncoupling the ends of the coil of metallic wire in response to changes in tire pressure,

said switch means having an open position in which the coil ends are open-circuited and a closed position in which the coil ends are short-circuited,

said coil functioning as a metallic object when the coil ends are short-circuited,

a detector of metallic masses including signal fault generating means,

said detector comprising at least one detector coil and the signal fault generating means responsive to modification of the mutual inductance of the detector coil,

and means supporting said detector to the ground in a stationary position to enable passage of the vehicle wheel closely adjacent thereto,

said means supporting said detector adapted to hold the detector coil in a substantially vertical plane spaced from the wheel coil by a distance determined by the wheel coil size and with the axis of the wheel coil and detector coil being substantially in line.

4,328,480

SYSTEM FOR MONITORING THE LUBRICATING-OIL PRESSURE OF AN ENGINE

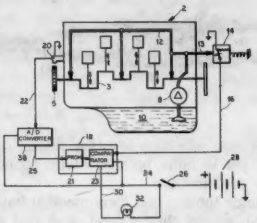
Rolf Keitel, Etting; Ernst-Olav Pagel, Böhmfeld, and Ludwig Drexler, Wettstetten, all of Fed. Rep. of Germany, assignors to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 184,006

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935938

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—60 **10 Claims**



1. A system for monitoring the pressure of lubricating oil in an engine operable at different speeds, comprising:

first sensing means for generating a first signal indicative of engine speed;

second sensing means for generating a second signal indicative of oil pressure;

evaluation means with input connections to said first and second sensing means for correlating said first and second signals with each other and emitting a third signal upon the oil pressure falling short of a predetermined minimum value assigned to a given engine-speed range;

alarm means connected to said evaluation means for activation by said third signal;

an engine-driven generator; and

test means connected to said generator and to at least one of said sensing means for detecting a possible malfunction of the latter.

4,328,481

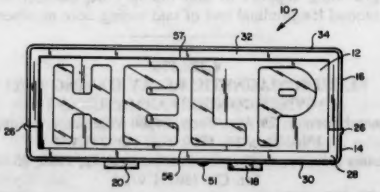
VISUAL CUING SYSTEM AND APPARATUS

William H. Sexton, 2675 Elliott Ave., Columbus, Ohio 43204

Continuation-in-part of Ser. No. 80,926, Oct. 1, 1979, abandoned. This application May 23, 1980, Ser. No. 152,549

Int. Cl.³ B60Q *1/26*

U.S. Cl. 340—74 **12 Claims**



1. Apparatus for visually cuing a human subject, comprising:

lamp means energizable to provide a source of visible illumination and having a predetermined rise and fall characteristic with respect to the corresponding energization and deenergization thereof;

observation surface means positioned for confronting illumination from said lamp means, including a surface portion of pigmented light transmissive material defining a pattern

through which light of first intensity may pass and configured for visually conveying information to said subject, said pattern being surrounded by a region opaque to said illumination, said region extending to a periphery;

peripheral surface means extending from said observation surface means periphery to substantially enclose said lamp means and positioned for confronting and transmitting illumination from said lamp means, said surface means being present as a translucent material effective to diffuse said illumination impinging thereon and transmit it at a second intensity selected as greater than said first intensity; and

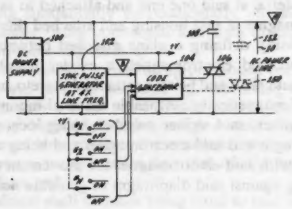
means for energizing said lamp means to effect the said transmission of illumination through said peripheral surface means and, simultaneously, through said pattern in intermittent fashion at a frequency of about two cycles per second, whereby a visual stimuli of predetermined temporal pause, p, having a value between about 80 and 400 msec. evoking a gamma movement effect with respect to human visual perception of said pattern is achieved.

4,328,482

REMOTE AC POWER CONTROL WITH CONTROL PULSES AT THE ZERO CROSSING OF THE AC WAVE

Paul E. Belcher, Los Angeles, and Daniel Hobel, Whittier, both of Calif., assignors to Consumer Electronic Products Corporation, Canoga Park, Calif.

Continuation of Ser. No. 852,211, Nov. 17, 1977, abandoned.
This application Jan. 21, 1981, Ser. No. 226,936
Int. Cl.³ H04B 3/54
U.S. Cl. 340—310 A **7 Claims**



1. In a remote control for providing the control of AC power transmitted as an AC power wave and with the AC power wave alternating through peak points of opposite polarity and with zero crossing therebetween at a remote location from a control location and using the AC power wave of an existing AC power line for the transmitting of control signals from the control location to the remote location,

a transmitter for location at the control location and for coupling to the AC power line,

the transmitter providing a predetermined number of control pulses to the AC power line for transmission along the AC power line upon actuation of the transmitter,

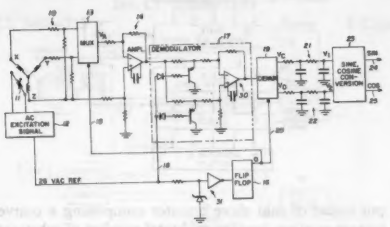
the transmitter including at least one bidirectional breakdown device and at least one capacitor in series across the AC power line and means for triggering of the at least one bidirectional breakdown device only at at least one peak point of the AC power wave and with the triggering corresponding to the predetermined number of control pulses for providing a charging of the at least one capacitor to a voltage equal substantially to the voltage with respect to zero of said peak point of the AC power wave in accordance with the predetermined number of control pulses and for triggering of the at least one bidirectional breakdown device only at at least one zero crossing of the AC power wave and with the triggering corresponding to the predetermined number of control pulses for providing a discharging of the at least one capacitor in accordance with the predetermined number of control pulses for producing control pulses having amplitudes substantially equal to the amplitude with respect to zero of the peak points of the AC power wave only at the zero crossing of the AC power wave.

4,328,483

MULTIPLEXED-DEMULTIPLEXED SYNCHRO DEMODULATION APPARATUS

Harold L. Swartz, Glendale; Harry D. Smith, Scottsdale, and Terrence L. Grimes, Phoenix, all of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 1, 1980, Ser. No. 117,886
Int. Cl.³ G08C 11/00
U.S. Cl. 340—347 SY **11 Claims**



1. Apparatus for use with synchro device means, said synchro device means providing a plurality of modulated synchro output signals, said apparatus demodulating said plurality of modulated synchro output signals into a respective plurality of d.c. signals, comprising

multiplexer means having a multiplexer output and responsive to said plurality of modulated synchro output signals for time multiplexing said plurality of modulated synchro output signals on to said multiplexer output, for providing time multiplexed modulated synchro output signals on said multiplexer output,

demodulator means responsive to said time multiplexed modulated synchro output signals for demodulating said time multiplexed modulated synchro output signals, thereby providing demodulated time multiplexed synchro output signals,

demultiplexer means having a plurality of demultiplexer outputs and responsive to said demodulated time multiplexed synchro output signals for time demultiplexing said time multiplexed synchro output signals onto said plurality of demultiplexer outputs, and

means for synchronizing said multiplexer means and said demultiplexer means with respect to each other to provide said plurality of d.c. signals on said plurality of demultiplexer outputs, respectively.

4,328,484

METHOD AND APPARATUS FOR NUMERICALLY CONVERTING A PARALLEL BINARY CODED NUMBER FROM A FIRST UNIT SYSTEM TO A SECOND UNIT SYSTEM

Henry M. Denecke, 629 W. Knoll Dr., Los Angeles, Calif. 90069

Filed Sep. 2, 1980, Ser. No. 183,196
Int. Cl.³ H03K 13/24
U.S. Cl. 340—347 DD **11 Claims**

1. A digital counter for converting the number of film frames displaced by a bidirectional film transport mechanism to a selected one of several output formats, each format being related to said number of film frames by a numerical conversion factor, comprising:

direction sensitive master counter means receiving directionally encoded digital input pulses indicative of film displacement by said bidirectional transport for deriving a

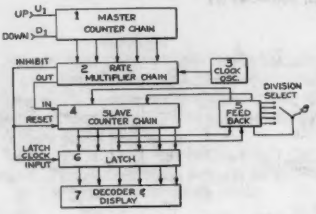
continuously updated output number indicative of the net number of frames displaced by said transport;

rate multiplier means having rate select inputs receiving as an input said updated output number and generating a cycle pulse output, each cycle comprising a number of serial output pulses equal to said input number and an inhibit pulse output;

clock means continuously driving said rate multiplier means;

slave counter means receiving said serial pulses as an input;

feedback means operative on said slave counter means for repeatedly subtracting said numerical conversion factor from the serial pulse count of said slave counter, the output count of said slave counter comprising a converted integer number equal to said total number of substractions and indicative of units of said second unit system and an unconverted serial pulse count remainder number indicative of film frames, said remainder number being lesser than said selected numerical conversion factor; and



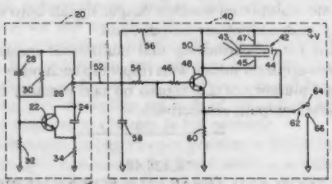
latch means clocked by said inhibit pulse output for latching the output of said counter means at the end of each said rate multiplier output cycle said inhibit pulse output being also connected for resetting said slave counter means following said latching whereby an updated converted output is latched for each rate multiplier cycle.

4,328,485

BINARY ALARM

Bronson Potter, R.F.D. #1, Mason, N.H. 03048

Continuation of Ser. No. 123,993, Feb. 25, 1980, abandoned.
This application Nov. 28, 1980, Ser. No. 211,176
Int. Cl.³ G08B *3/10*
U.S. Cl. 340—384 E **20 Claims**



1. In an audible alarm device comprising a transducer mounted to resonate at a substantially specific natural resonant frequency, a resonant alarm circuit constructed in an alarm mode to drive said transducer at said resonant frequency to produce a distinct audible tone based upon said circuit resonating at said natural frequency, and a switch having a first state for activating said alarm circuit in said alarm mode, and a second state in which said alarm circuit is not in said alarm mode, the improvement that enables said alarm device to audibly indicate said second state of said switch comprising

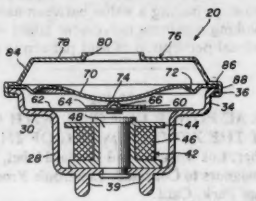
a non-resonant, background signal generating means which produces a non-resonant signal in relation to said transducer, to drive said transducer, said signal generating means and said transducer cooperatively constructed to produce an audible, status-indicating relatively low intensity background sound, without discernible tone.

4,328,486

ELECTRIC HORN WITH IMPROVED STRIKER ASSEMBLY

Philip J. Burnstein, Skokie, and Gerard Seyler, Elgin, both of Ill., assignors to Pittway Corporation, Aurora, Ill.

Filed Oct. 9, 1980, Ser. No. 195,602
Int. Cl.³ G08B *3/10*
U.S. Cl. 340—388 **7 Claims**



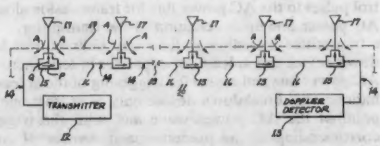
1. An improved horn for generating an audible signal comprising a housing formed of magnetically permeable material and being open at one end thereof, a diaphragm of relatively flexible material at said one end and attached to said housing, an electromagnet in said housing and attached thereto, a shelf in said housing defining a plane disposed between said diaphragm and said electromagnet, a carrier member loosely resting on said shelf and being unattached thereto, and a striker member of magnetically permeable material mounted on said carrier member, said striker member being located between said diaphragm and said electromagnet and being operatively associated with said electromagnet for movement away from and striking against said diaphragm to generate noise.

4,328,487

INTRUSION DETECTOR SYSTEM

James Cheal, Tempe, Ariz., assignor to Southwest Microwave, Inc., Tempe, Ariz.

Filed Jul. 28, 1980, Ser. No. 172,944
Int. Cl.³ G05B *13/18*
U.S. Cl. 340—554 **10 Claims**

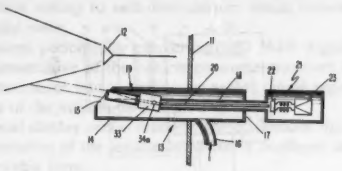


1. A perimeter intrusion detection system comprising a transmitter for generating a wave signal to be propagated, an elongated wave propagating element connected at one end to said transmitter and defining at least a portion of the intrusion perimeter, said wave propagating element including means for radiating energy relative to said intrusion perimeter and for receiving radiated energy from said intrusion perimeter, and a receiver connected at the other end to the wave propagating element.

4,328,488
FLAME-DETECTING APPARATUS INCLUDING A FIELD-LIMITING DEVICE

Noboru Yanai, Musashino; Toshiyuki Komori, Fuchu; Atushi Ichioka, Machida, and Masanori Imooka, Atsugi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 19, 1979, Ser. No. 105,309
Claims priority, application Japan, Jan. 12, 1979, 54-1129[U]
Int. Cl.³ G01N *21/58*; G08B *17/12*
U.S. Cl. 340—578 11 Claims



1. Flame-detecting apparatus comprising:

light-responsive means to develop an electric signal in response to light rays to be detected;

light guide means having a light-receiving surface for transmitting light received by said light-receiving surface to said light-responsive means;

field-limiting means, including a convex lens member, aperture-defining means and a cylindrical shell member, for defining a field to be monitored;

said convex lens member being positioned at a distance from said surface longer than the focal length of said convex lens member, parallel light rays from a detected flame impinging substantially perpendicularly on said convex lens member being converged and then diverging onto said light-receiving surface;

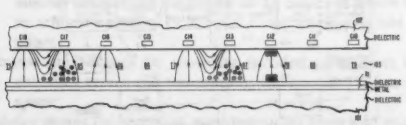
said aperture-defining means being positioned between said convex lens member and said light-receiving surface at approximately a focal point of said convex lens member for only giving a single light passage around a light axis of said convex lens member, the cross-sectional area of said light passage being smaller than that of said light-receiving surface; and

said cylindrical shell member being fixed to said light guide means for supporting said convex lens member and said aperture-defining means and for preventing ambient light from impinging on said light-receiving surface except through said convex lens member.

4,328,489
SELF-SHIFT AC PLASMA PANEL USING TRANSPORT OF CHARGE CLOUD CHARGE

Peter D. T. Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 7, 1980, Ser. No. 109,859
Int. Cl.³ G09G *3/28*
U.S. Cl. 340—713 21 Claims



1. Circuitry for use in a display system which includes at least first and second adjacent ac gas discharge sites, said circuitry characterized by

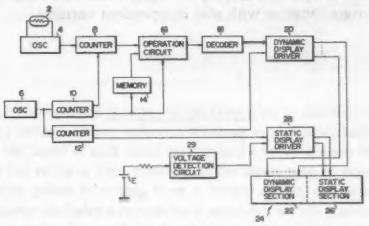
first means for impressing an excitation pulse across said first site, said excitation pulse being such as to create a charge cloud in the vicinity of said first site only if it is in the ON state and

second means for impressing a priming pulse across said second site in such a way as to create a positive field gradient from said second site to said first site beginning at substantially the same point in time that said charge cloud is created, whereby charge carriers from said charge cloud are transported to the vicinity of said second site.

4,328,490
LIQUID CRYSTAL DISPLAY DEVICE WITH LOW BATTERY INDICATION

Takahiro Usuba; Kazuhiro Iinuma; Soichi Suzuki, and Yukito Abe, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 16, 1980, Ser. No. 140,878
Claims priority, application Japan, Jun. 29, 1979, 54/82148
Int. Cl.³ G08B *5/36*
U.S. Cl. 340—715 6 Claims



1. A liquid crystal display device powered by a battery comprising:

liquid crystal display means including first and second display sections;

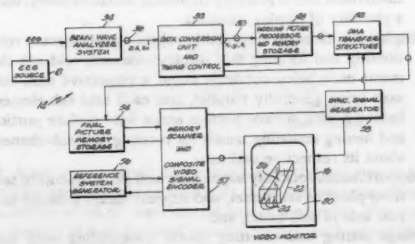
first driving means powered by said battery and coupled to said liquid crystal display means to dynamically drive said first display section; and

second driving means powered by said battery and coupled to said liquid crystal display means to statically drive said second display section, whereby the contrast of said second display section noticeably exceeds the contrast of said first display section when the voltage of said battery is below a known level.

4,328,491
DYNAMIC DATA DISPLAY SYSTEM, AS FOR USE WITH EEG

Mihai C. Demetrescu, and Stefan G. Demetrescu, both of 17761 Palmento Way, Irvine, Calif. 92715

Filed Mar. 10, 1980, Ser. No. 128,414
Int. Cl.³ G06K *15/20*
U.S. Cl. 340—747 21 Claims


BRAIN WAVE ANALYSING SYSTEM
DATA CONVERSION UNIT AND TIMING CONTROL
INCOMING PICTURE PROCESSING AND MEMORY STORAGE
D/A TRANSFORMATION STRUCTURES
E.E.G. SOURCE
FINAL PICTURE MEMORY STORAGE
MEMORY SCANNING AND COMPOSITE VIDEO SIGNAL ENCODER
REFERENCE SYSTEM GENERATOR
SYNC. SIGNAL GENERATOR
VIDEO MONITOR

1. A display system for data events characterized in at least three dimensions, and represented by electrical signals, one of

said dimensions being of an independent variable, other dimensions being dependent variables, comprising:

a plane display device for selectively displaying images as traced thereon;

means defining a dimensioned field of reference for said display device, said field referencing said three dimensions characterizing said data events in accordance with the display thereof and defining an origin location with respect to said independent variable;

first means for processing said electrical signals to provide display signals for actuating said display device to display symbols indicating the other dimensions of said data events and referenced to the origin location of said field of reference with respect to said independent variable; and

second means for processing said display signals to shift the display thereof by said display device along the independent variable dimension of said field of reference to provide a dynamic display changing with reference to said origin location with said independent variable.

4,328,492

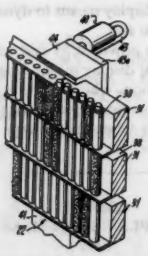
AUTOMATIC DISPLAY SYSTEM AND PROCESS

Tadeusz Bobak, and Tadeusz C. Bobak, both of 540 San Vicente Blvd., Santa Monica, Calif. 90405

Filed Sep. 6, 1979, Ser. No. 72,972

Int. Cl.³ G08B 5/36

U.S. Cl. 340—764 **14 Claims**



1. A display system for automatically displaying dot matrix images, said system comprising;

a generally flat display panel having a generally vertical front plane, a panel body and a rear side, said panel being subdivided into a plurality of display modules comprising a plurality of display elements;

display sub-elements disposed in substantially adjacent relationship and forming said display elements, said sub-elements each being rotatable about a respective axis, said axes being generally parallel, and each said sub-element having a dark surface portion and a light surface portion and having actuating means for rotating said sub-element about its respective said axis;

support means rotatably supporting said sub-elements in said front plane of said panel, said support means forming said rear side of said panel; and

image setting and resetting means cooperating with said display sub-element actuating means; said image setting and resetting means being adapted to travel behind said modules.

4,328,493

LIQUID CRYSTAL COLOR DISPLAYS

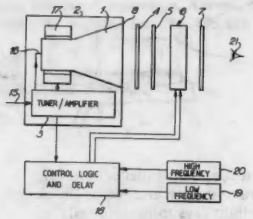
Ian A. Shanks; Michael G. Clark, both of Malvern, England, and Frank M. Leslie, Glasgow, Scotland, assignors to National Research Development Corporation, London, England

Filed Jan. 23, 1980, Ser. No. 114,464

Claims priority, application United Kingdom, Jan. 24, 1979, 2482/79

Int. Cl.³ G09G 3/36

U.S. Cl. 340—784 **10 Claims**



1. A liquid crystal display arranged to avoid a patchy appearance in the display when the display is switched by the two frequency method, said display comprising a liquid crystal cell capable of rotating the plane of plane polarized light passing therethrough and transmitting polarized light without such rotation dependent on electrical signals applied to the cell, the cell itself comprising two spaced transparent slides each bearing an electrode structure containing a layer of a nematic or a cholesteric liquid crystal material having a dielectric anisotropy which changes between positive and negative values at a critical frequency, f_c, of applied electrical signals, a first source of low frequency, f_l, electrical signals, a second source of high frequency, f_h, electrical signals, where f_h is greater than f_c which is in turn greater than f_l, and control logic for causing application of the two different frequency signals f_l and f_h in sequence to the cell with a space between the end of application of the low frequency signals f_l and the beginning of application of the high frequency signal f_h whereby the liquid crystal material adopts a uniform twist in the cell when driven to an OFF state thereby to eliminate a patchy appearance in the display resulting from areas of different molecular twist in said liquid crystal material.

4,328,494

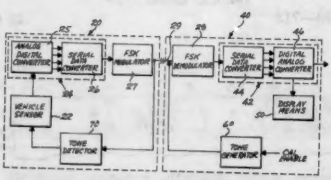
DIGITAL DATA LINK FOR TRUCK WEIGHING APPLICATIONS

Richard Goodall, 3312 - 38th Ave. West, Seattle, Wash. 98199

Filed Dec. 26, 1979, Ser. No. 106,838

Int. Cl.³ G08C 19/16

U.S. Cl. 340—870.18 **17 Claims**



1. An apparatus for communicating a vehicle parameter to another location on the vehicle remote and apart from where the vehicle parameter is measured comprising:

(a) sensor means responsive to the vehicle parameter being measured and producing an output analog signal proportional to the vehicle parameter;

(b) means periodically converting said output analog signal

into a digital signal whereby the vehicle parameter being measured is represented by an N-bit digital code;

(c) calibration means simulating said sensor means output analog signal and switchable to said means periodically converting said analog signal into a digital signal thereby providing calibration for the apparatus;

(d) a transmitter in communication with a demodulator by means of a hardwire link constituting a portion of the vehicle's existing wiring, said transmitter transmitting said N-bit ditital code from means for periodically converting said analog signal into a digital signal through said existing vehicle wiring to said demodulator which receives said digital code;

(e) means periodically converting said N-bit digital code representative of the vehicle parameter received by said demodulator into a continuous analog signal representative of the vehicle parameter; and,

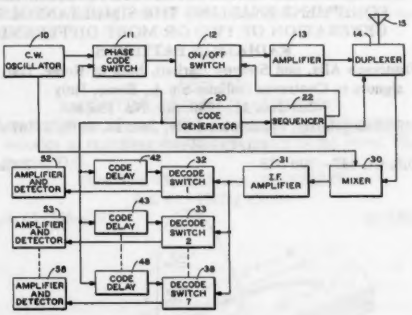
(f) visual display means whereby the continuous signal representative of the vehicle parameter is displayed in a user viewable form.

4,328,495

UNAMBIGUOUS DOPPLER RADAR

Baard H. Thue, Lino Lakes, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 28, 1980, Ser. No. 144,120
Int. Cl.³ G01S *13/28*
U.S. Cl. 343—17.2 PC **5 Claims**



1. An improved pulsed doppler radar system comprising:

means for generating substantially uniform pulses of predetermined amplitude, duration, and frequency;

encoding means for encoding said pulse with a code built up from a PRN code staggered over 2_{n-1} pulses, each containing m resolution elements, where n is an arbitrary number designating the degree of the code and where m is an arbitrary number or is equal to the number of bits per pulse;

transmitting means for receiving encoded pulses from said encoding means and transmitting said encoded pulses into space;

delay means for receiving encoded pulses from said encoding means and delaying said encoded pulses by a predetermined delay time;

means for receiving pulses reflected from a target located in space; and

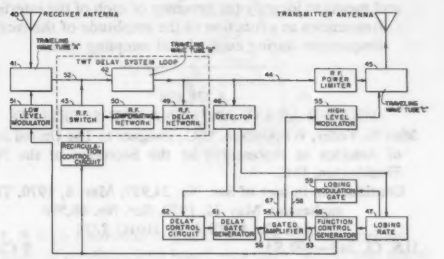
means for decoding said received pulses reflected from a target with delayed pulses from said delay means and thereby determine the range and the approaching or receding rate of the target.

4,328,496

DELAY CONTROL FOR A PULSE REPEAT-BACK JAMMING SYSTEM

Charles F. White, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1958, Ser. No. 757,644
Int. Cl.³ G01S *7/38*
U.S. Cl. 343—18 E **3 Claims**



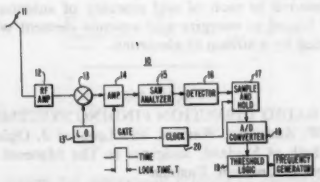
1. In a repeat-back jammer of the type used to deceive range tracking radar systems, wherein tracking is accomplished by a gate at the input of said radar system and a servo system which adjusts the relative time position of the input gate to coincide with echo pulses returning from a distant target, and wherein said jammer includes a repeat-back amplifier which transmits a jamming pulse for each said echo pulse the initial jamming pulse being so delayed with respect to said echo pulse that only a minor portion of said jamming pulse coincides with said input gate, said jamming pulse being of sufficient amplitude that said minor portion obscures the echo pulse, the improvement which comprises; time delay means to increase said initial delay of said jamming pulse with respect to said echo pulse in response to a control signal, wave generating means to supply a control signal for said time delay means and a multiplier means for multiplying said signal by $1-\mu_o\beta_o$ interconnecting said time delay means and said wave generating means, wherein $\mu_o\beta_o$ is the open loop transfer function of said servo system.

4,328,497

METHOD AND SYSTEM FOR JAMMING ANALYSIS AND TRANSMISSION SELECTION

Christopher R. Vale, Elkridge, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1980, Ser. No. 176,624
Int. Cl.³ G01S *7/36*
U.S. Cl. 343—18 E **9 Claims**



1. A jamming analysis and transmission selection system for a radiant energy communication or radar system, comprising:

a surface acoustic wave device having a plurality of spaced groups of interdigitated metallic fingers, each group having a finger width and spacing therebetween to resonate at a single different one of said frequencies,

means to receive interfering frequencies throughout a prede-

termined bandwidth, only throughout a predetermined discrete time interval,

means to launch the interfering frequencies contained in the discrete time interval as an acoustic surface wave packet on a SAW substrate having a frequency analysis pattern,

sampling means operatively connected to said wave device to detect the amplitude of received frequencies at each of a plurality of discrete sampling time each said sampling time occurring during a preselected time interval subsequent to the occurrence of the discrete time interval,

and means to identify the presence of each of the interfering frequencies as a function of the amplitude of the received frequencies during each of said sampling times.

4,328,498

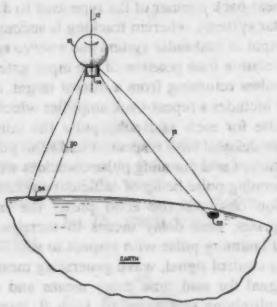
PHASED ARRAY ANTENNA FOR SATELLITE

Max N. Yoder, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 24,937, Mar. 6, 1970. This application May 21, 1970, Ser. No. 48,590

Int. Cl.³ G01S *3/74*; H01Q *3/26*

U.S. Cl. 343—100 SA **9 Claims**



4. The combination of a spin-stabilized earth satellite having an axis of revolution and an improved phased array antenna system wherein said antenna system comprises:

a plurality of antenna elements located on the exterior of said satellite and arranged in a pattern which extends around the axis of revolution of said satellite; and

energizing means connected to said plurality of antenna elements for energizing said antenna elements to radiate beams of information-carrying electromagnetic energy in directions which will illuminate predetermined locations on the earth as said spin-stabilized satellite orbits around the earth,

said energizing means includng two semiconductor diodes connected to each of said plurality of antenna elements and biased to energize said antenna element when bombarded by a stream of electrons.

4,328,499

RADIO DIRECTION FINDING SYSTEMS

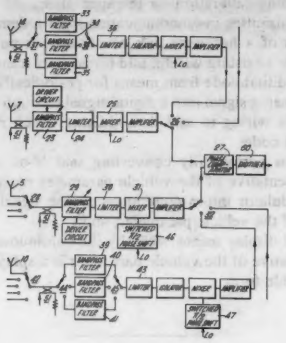
Donald W. Anderson, Watford, and Leonard J. Ogier, St. Albans, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Oct. 24, 1979, Ser. No. 89,172

Int. Cl.³ G01S *5/02*

U.S. Cl. 343—113 R **5 Claims**

1. A radio direction finding system of the kind in which radio signals incident upon spaced antenna elements from a predetermined sector are compared in phase and the value of phase difference is utilised to determine the angle of arrival of said radio signals with respect to said antenna elements, wherein there are provided two radio receiver arrangements and at least three spaced antenna elements aligned substantially in a common plane to receive radio signals from said sector, means to connect one of said receiver arrangements to receive radio signals from one only of said antenna elements and means to connect the other of said receiver arrangements to receive



radio signals selectively from any one of the remaining antenna elements, and the angle of arrival of said radio signals is arranged to be determined from the respective phase differences between radio signals received by said one antenna element and by said other antenna elements respectively.

4,328,500

INTEGRATED ANTENNA ARRAY FOR RADAR EQUIPMENT ENABLING THE SIMULTANEOUS GENERATION OF TWO OR MORE DIFFERENT RADIATION PATTERNS

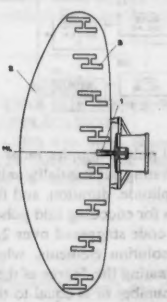
Francesco Alia, and Stefano Barbati, both of Rome, Italy, assignors to Contraves Italiana S.p.A., Rome, Italy

Filed Jun. 11, 1980, Ser. No. 158,466

Claims priority, application Italy, Jun. 14, 1979, 23567 A/79

Int. Cl.³ H01Q *1/38*

U.S. Cl. 343—700 MS **3 Claims**



1. An integrated radar antenna array, comprising:

(a) a double curvature reflector with different height and width dimensions;

(b) an exciter positioned at the focal point of said reflector for emitting electromagnetic radiation of a wavelength, λ; and

(c) a micro strip surface congruent with said double curvature reflector for reflecting the electromagnetic radiation emitted by said exciter and radiating electromagnetic radiation at a wavelength other than λ, said micro strip surface being spaced from said double curvature reflector by a distance essentially equalling an integer multiple of

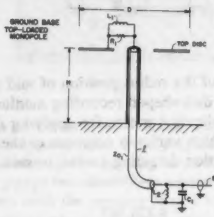
λ/2 and means associated with said reflector for feeding signals to said micro strip surface.

4,328,501

SMALL BROADBAND ANTENNAS USING LOSSY MATCHING NETWORKS

Charles M. DeSantis, Neptune, N.J.; Albert H. Zannella, Mount Carmel, Pa.; Michael W. Begala, Fairhaven, N.J.; John R. Wills, Ocean Grove, N.J., and Watson P. Czerwinski, Forked River, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 23, 1980, Ser. No. 142,917
Int. Cl.³ H01Q *9/36*
U.S. Cl. 343—749 5 Claims



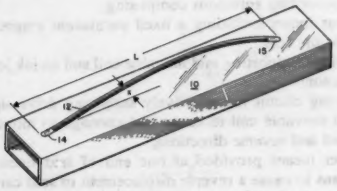
1. A broadband small vertical manopole top-loaded, top-fed antenna unit topped by a flat capacitive disc at one point of which disc is connected the antenna feed signal through a series matching circuit, said top-matching circuit for impedance matching the antenna over a broad frequency range, the circuit comprising one or more resistors and one or more inductors.

4,328,502

CONTINUOUS SLOT ANTENNAS

Glenn A. Scharp, Norco, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1965, Ser. No. 465,807
Int. Cl.³ H01Q *13/10*
U.S. Cl. 343—771 10 Claims



1. A continuous slot antenna having improved radiation pattern comprising:

(a) a section of rectangular waveguide,

(b) a long continuous slot cut in one broad face of said waveguide,

(c) said slot being positioned on one side of the waveguide centerline and the slot coupling being controlled by varying the distance said slot is offset from said centerline along the length thereof to conform to a predetermined aperture distribution, the power radiated at any point along the slot being determined by the amount of slot offset from the centerline at that point,

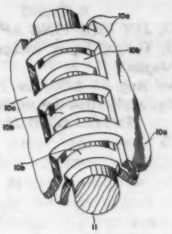
(d) a resonant load inserted in each of the ends of said slot, whereby standing waves on the slot are eliminated and aperture distribution is improved.

4,328,503

HIGH RESOLUTION MAGNETIC PRINTING HEAD

Ami E. Berkowitz, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,359
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.5 6 Claims



1. A high resolution magnetic printing head comprising:

a pair of printed circuit board structures, each of said circuit board structures having an elongated gap formed therein, and including a plurality of regularly spaced conductive signal lines, said signal lines being substantially parallel where they cross said elongated gap;

said circuit board structures being positioned so that said gaps are aligned and so that the conductive lines on at least one of the board structures are arched and disposed between the conductive lines on the other board structure such that a plurality of horizontal spaces are defined between adjacent conductive signal lines; and

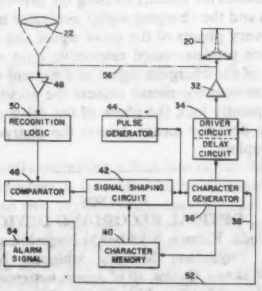
high permeability magnetic material electrodeposited in said horizontal spaces.

4,328,504

OPTICAL SENSING OF INK JET PRINTING

Helmut Weber, Augsburg, and Peter H. Reitberger, Munich, both of Fed. Rep. of Germany, assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 16, 1980, Ser. No. 197,714
Int. Cl.³ G01D *18/00*
U.S. Cl. 346—75 18 Claims



1. A system for supervising printing of characters in non-impact manner comprising at least one

printing element movable along a line of printing,

means for actuating said printing element for printing said characters,

means for generating signals indicative of characters to be printed,

means for shaping the character generated signals into optical signals capable of being optically produced,

means for optically sensing said printed characters and providing signals thereof,

means for comparing said optical signals with said printed character signals, and

means for altering the actuation of said printing element to correct the printing of characters where said optical signals do not correspond with said printed character signals.

4,328,505

INK JET PRINTING APPARATUS

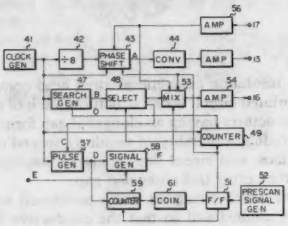
Koichiro Jinnai, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,608

Claims priority, application Japan, Sep. 3, 1979, 54-111727

Int. Cl.³ G01D *18/00*

U.S. Cl. 346—75 **4 Claims**



1. An ink jet printing apparatus including an ink ejection head, drive signal generator means for applying an alternating electric drive signal to the ejection head causing the ejection head to eject a jet of ink which separates into droplets at a predetermined position, charging electrode means disposed at the predetermined position, charging signal generator means for applying an alternating electric charging signal to the charging electrode means for charging the droplets, charge detector means disposed downstream of the charging electrode means for detecting a charged condition of the ink droplets and scan means for producing relative scanning movement between the ejection head and a sheet, characterized by comprising:

position detector means for detecting a prescan position of the ejection head relative to the sheet; and

control means for initially causing the drive signal generator means and the charging signal generator means to sweepingly vary phases of the drive signal and charging signal between predetermined respective limit values, lock the phase of the charging signal at a present value when the position detector means detects the prescan position and subsequently lock the phase of the drive signal when the charge detector means detects the charged condition of the droplets.

4,328,506

OPTICAL RECORDING DEVICE

Tomio Yoshida, Katano; Michiyoshi Nagashima, Ikoma; Shunji Harigae, Neyagawa; Makoto Ichinose, Moriguchi, and Noboru Wakami, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 16, 1980, Ser. No. 216,974

Claims priority, application Japan, Dec. 18, 1979, 54/165359

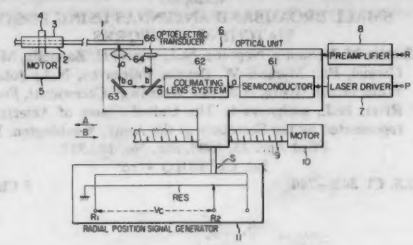
Int. Cl.³ G01D *15/14*; G11B *7/00*

U.S. Cl. 346—108 **3 Claims**

1. An optical recording device in which the recording current whose AC component varies in the range between $\pm I_{AC}$ is applied to a light source which emits the output light in response to a current applied thereto, and the output light is focused to a small spot on a disk-shaped recording medium spinning at a predetermined velocity so that the recording is made along a concentric or spiral track in terms of the energy of the output light focused on said disk,

Characterized by the provision of

a radius position detecting means for generating the signal



representative of the radius position of said output signal focused on the disk-shaped recording medium, and a DC component application means for applying the DC component I_{DC}, which varies in response to the output from said radius position detecting means, to said light source.

4,328,507

RECORDING APPARATUS

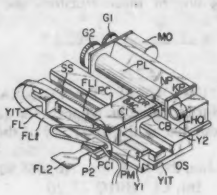
Hiroshi Kyogoku, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1980, Ser. No. 151,702

Claims priority, application Japan, May 31, 1979, 54/67742

Int. Cl.³ G01D *15/24*

U.S. Cl. 346—139 R **3 Claims**



1. A recording apparatus comprising:

a linear motor including a fixed permanent magnet and a movable coil;

a carriage supporting said movable coil and an ink jet nozzle thereon;

a driving circuit for selectively supplying drive signals to said movable coil to cause said carriage to move in forward and reverse directions;

stopper means provided at one end of said linear motor means to cause a reverse displacement of said carriage to be mechanically stopped;

protection means provided in the vicinity of said stopper means to protect said ink jet nozzle; and

means for maintaining said carriage at said one end of said linear motor means at said stopper means upon the application of a back signal from said drive circuit to said moving coil.

4,328,508

III-V QUATERNARY ALLOY PHOTODIODE

Henry Kressel, Elizabeth, and Gregory H. Olsen, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,369

Int. Cl.³ H01L *29/161*

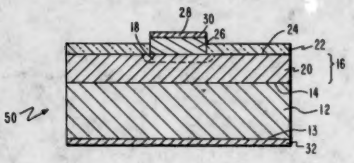
U.S. Cl. 357—16 **13 Claims**

1. A photodiode which comprises:

a body of an n-type III-V binary alloy having two opposed major surfaces;

a first layer of a III-V quaternary alloy overlying a first major surface of said body wherein the lattice constant of said alloy is about the same as the lattice constant of said body;

a second layer of an electrically insulating material, with an opening extending through said second layer, overlying said first layer;



a third layer of the same III-V binary alloy as said first layer having a p-type dopant, overlying said first layer in the region defined by the opening in said second layer;

a region of p-type conductivity in a portion of said first layer contiguous with the opening in said second layer;

an electrically conducting layer overlying a portion of said third layer so as to form an electrical contact to said third layer;

an electrically conducting layer overlying a portion of a second major surface of said body so as to form an electrical contact to said second major surface.

4,328,509

CURRENT HOGGING LOGIC CIRCUIT WITH NPN VERTICAL REVERSAL TRANSISTOR AND DIODE/PNP VERTICAL TRANSISTOR OUTPUT

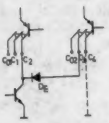
Heinz Lehning, Nyon, Switzerland, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

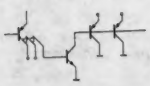
Continuation of Ser. No. 403,767, Oct. 5, 1973, abandoned. This application Nov. 14, 1979, Ser. No. 94,119

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1973, 2344244

Int. Cl.³ H01L *29/72*

U.S. Cl. 357—36 **5 Claims**





1. A logic structure of the silicon planar type comprising:

a silicon substrate;

lateral pnp transistor structures constituting a plurality of logic elements arranged in successive logic stages and each set in an n-type island portion (14) of an epitaxial layer serving as a common base element, each said pnp transistor structure comprising, for each logic element:

a p-type diffusion-formed emitter zone (E);

a p-type diffusion-formed output collector zone (C_0) in the neighborhood of said emitter zone;

at least one additional p-type diffusion-formed collector zone (C_1, C_2) located between said emitter zone and said output collector zone, the number and disposition thereof being chosen for performance of a logic function with respect to every control collector current as logic input and output collector current as logic output by virtue of the ability of each said control collector zone (C_1, C_2) positioned as aforesaid to prevent, when provided with voltage bias negative with respect to said emitter zone (E), charge carriers injected by said emitter zone (E) from reaching portions of said output collector zone (C_0) screened from said emitter zone by said particular control collector zone; and

an npn output current reversal transistor (T_r) coupled to said output collector zone, having a base which is constituted by a p-type zone diffusion formed in an n-type layer that is separated by a p-type isolation strip from the n-type layer in which said output collector zone is diffusion-formed but which p-type base zone is electrically connected to said output collector zone (C_0), said current reversal transistor having a collector which feeds the output connection for the logic output of the logic element to which said output collector zone (C_0) belongs;

connections being provided for causing the output of one stage to control zones of the logic elements of at least two stages following said one stage, at least one of said collector zones of said elements of said following stages being located so that at least one other of said collector zones is interposed between it and the corresponding one of said emitter zones, a control lead connection being provided to said control collector zone not adjacent to its corresponding emitter; and

a diode oriented in its conductive direction for control current and interposed in said control lead connection for decoupling the inputs of the respective following stages.

4,328,510

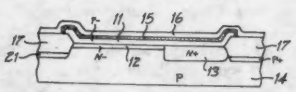
HIGH DENSITY READ/WRITE MEMORY CELL

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1979, Ser. No. 625

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—41 **9 Claims**



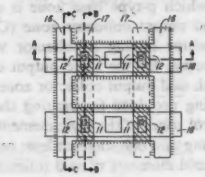
1. A memory cell comprising a first thin region of one conductivity type adjacent a face of a body of semiconductor material, a second thin region of opposite conductivity type immediately underlying said first region, the first and second regions being of substantial area to provide a capacitor for storage of charge in the memory cell, a third region of said opposite type adjacent said second region and more heavily doped than said second region, the third region being contiguous to a part of the first region, elongated conductive means for making ohmic electrical connection to the third region thereby providing an input and output for data to be stored in or recalled from the cell, a substrate including a fourth region of said one type underlying said second and third regions and much thicker than said second and third regions and a conductive strip on said face over said first region insulated therefrom by a thin insulating coating, the conductive strip functioning as an address line to activate access to the capacitor of the cell via said third region.

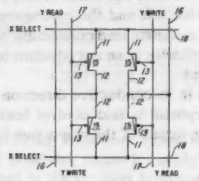
4,328,511

TAPER ISOLATED RAM CELL WITHOUT GATE OXIDE

Al F. Tasch, Jr., Richardson, Tex.; Geoff W. Taylor, Murray Hill, N.J., and Pallab K. Chatterjee, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 10, 1979, Ser. No. 102,062
Int. Cl.³ H01L 27/02, 29/80
U.S. Cl. 357—41 9 Claims





1. A semiconductor memory cell comprising:

a substrate having a first conductivity type;

a source region and a separate drain region within the surface of said substrate, said source and drain regions both having a second conductivity type, opposite to said first conductivity type;

a third doped region having said second conductivity type, between said source and drain regions within said substrate;

a first doped layer having said first conductivity type, between said source and drain regions above said third doped region;

a fourth doped region having said second conductivity type, above said first doped layer at the surface of said substrate;

a Y-write line above and in electrical contact with said fourth doped region, said Y-write line being separate from said source region, said drain region, and said first doped layer, said Y-write line being conductive and elongated parallel to the surface of said substrate;

an insulating layer formed above said Y-write line;

an X-select line electrically in contact with a first one of said source region and said drain region, said X-select line being separated from said Y-write line by said insulating layer, said X-select line being elongated in a direction which is orthogonal to the direction of elongation of said Y-write line; and

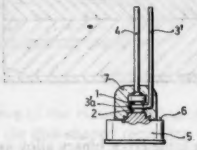
a Y-read line within the surface of said substrate, having said second conductivity type, said Y-read line being contiguous to and continuous with the other one of said source region and said drain region, said Y-read line being elongated parallel to said Y-write line.

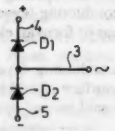
4,328,512

TWO-ELEMENT SEMICONDUCTOR DIODE RECTIFIER ASSEMBLY STRUCTURE

Klaus Heyke; Günter Schmidt, both of Reutlingen, and Istvan Ragaly, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 903,908, May 8, 1978, abandoned. This application Jan. 24, 1980, Ser. No. 114,835
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727178
Int. Cl.³ H01L 23/32, 23/28, 23/02
U.S. Cl. 357—76 5 Claims





1. An encapsulated full-wave rectifier assembly structure comprising:

first and second circular plate or disk-shaped semiconductor diodes (1,2) of similar diameter connected in electrical series and geometrically stacked above each other in superposed alignment;

a first electrode (3) having a laterally extending wire portion and a a flat circular disk-like plate portion (3*a*) of larger diameter than the diameter of said diodes, and forming a first projecting portion, sandwiched between, aligned with, and providing an anchoring and soldering surface soldered to said first and second diodes;

a second electrode (4) soldered to the side of said first diode (1) remote from said first electrode (3) having a circular head portion (4*a*) of larger diameter than the diameter of the diode (1) to which it is connected, and forming a second projecting portion;

a third electrode (5) soldered to the side of said second diode (2) remote from said first electrode (3) and formed with a circumferentially projecting portion;

said diodes and electrodes forming an aligned stack in which the different diameters of the diodes and the electrodes define an indented or crenelated outer surface;

a single, continuous integral cast or pressed resinous mass (7) surrounding said first, second and third electrodes with the diodes therebetween, the indented or crenelated surface defined by the difference in diameter of the projecting portions of said electrodes and said diodes, and the laterally extending wire portion of the first electrode (3) forming anchor means to anchor the stack in said resinous mass,

at least one of said second electrode (4) and said third electrode (5) being formed as a solid metal base (5*a*) having a raised central platform (5*b*) defining a shoulder surface (6) and the respective projecting portion of the diameter larger than said diodes includes an obliquely extending annular lip projecting from the shoulder surface and forming said anchor means, said resinous

mass surrounding said structure up to said shoulder surface (6);

wherein at least one of said second electrode (4) and said third electrode (5) has a head-shaped enlargement where it is soldered to its respective diode, said head-shaped enlargement (4a, 5''c) serving as said anchor means;

and wherein said wire portion extends laterally outside of said mass.

4,328,513

SYNCHRONIZING SIGNAL GENERATOR DEVICE FOR TELEVISION

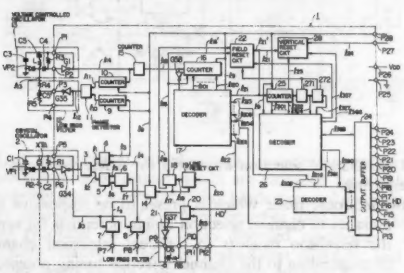
Makoto Furihata, Tachikawa; Toyotaka Machida, Kashiwa, and Yuichi Ikemura, Nagareyama, all of Japan, assignors to Hitachi, Ltd. and Victor Company of Japan, Ltd., both of Japan

Filed Apr. 16, 1980, Ser. No. 140,838

Claims priority, application Japan, Apr. 20, 1979, 54-47910

Int. Cl.³ H04N *9/46, 5/06*

U.S. Cl. 358—19 **9 Claims**



1. A synchronizing signal generator device for television comprising a first signal generator circuit which provides a first reference signal of a subcarrier frequency or a frequency which is an integral number times said subcarrier frequency, a first counter which receives said first reference signal of said first signal generator circuit, a second signal generator circuit which provides a second reference signal, the frequency of said second reference signal being controlled by a control signal, a second counter which receives said second reference signal of said second signal generator circuit, a phase detector circuit which detects the phase difference between the output signals of said first and second counters and which provides the control signal for said second signal generator circuit, and a signal processor circuit which receives the output of said second signal generator circuit and which forms a horizontal synchronizing signal, including means for making the count numbers of said first and second counters variable, thereby making it possible to selectively generate synchronizing signals of the NTSC format, the PAL format and the SECAM format.

4,328,514

CRT DRIVE CIRCUIT COMPRISING WHITE AND BLACK LEVEL CLAMPING CIRCUITRY

Akio Nakashima, and Yoshimasa Okamoto, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 29, 1980, Ser. No. 191,830

Claims priority, application Japan, Sep. 28, 1979, 54/124070

Int. Cl.³ H04N *5/18, 9/535*

U.S. Cl. 358—33 **6 Claims**

1. A CRT drive circuit comprising:

(a) a video signal input terminal to which a video signal transmission cable is to be connected;

(b) a video amplifier circuit for amplifying a video signal applied to said input terminal to a level sufficient to drive a CRT;

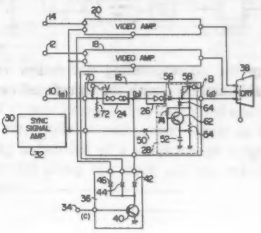
(c) a blanking circuit for clamping a video signal output from said video amplifier circuit to a black level for at least a flyback period;

(d) a white level clamping circuit connected in said video amplifier circuit between said input terminal and said blanking circuit for clamping said video signal to a level corresponding to a white level when said cable is not electrically connected to said input terminal; and

(e) a D.C. restore circuit for clamping the black level of said video signal output to a level corresponding to a black level input to said CRT by a peak clamping circuit.

6. A CRT drive circuit comprising:

(a) three input terminals for three color signals to which a video signal transmission cable for transmitting said three color signals is to be connected;



(b) three video amplifier circuits for amplifying video signals applied to said input terminals to a level sufficient to drive a CRT;

(c) a blanking circuit for clamping the video signals at the outputs of said video amplifier circuits to a black level during a blanking period in which a synchronizing signal is included;

(d) three white level clamping circuits connected in said video amplifier circuits respectively between said input terminals and said blanking circuit for clamping the video signals to a level corresponding to a white level when said cable is not electrically connected to said input terminals; and

(e) three D.C. restore circuits for clamping black levels of said video signals to a fixed level by peak clamping circuits.

4,328,515

METHOD AND A DEVICE FOR RECORRECTING STANDARD COLOR CORRECTIONS IN A COLOR PICTURE RECORDING

Klaus Wellendorf, Heikendorf, Fed. Rep. of Germany, assignor to Dr. Ing. -Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 91,899

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848376

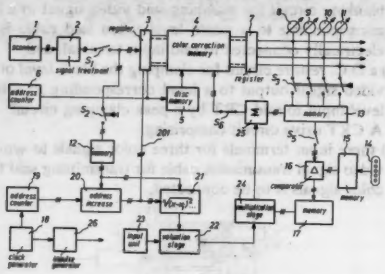
Int. Cl.³ G03F *3/08*

U.S. Cl. 358—80 **18 Claims**

1. In a method for the area-wise change of standardized color corrections in color reproduction devices in which an addressable memory receives a plurality of digitalized trichromatic picture scanning values as input values and emits a corresponding plurality of corrected picture recording signals as output values, and in which an assignment of memory input to memory output values is input into the memory as standardized color correction data before the reproduction, the improvement therein comprising the steps of:

for a location to be specially corrected, measuring the color correction values;

forming difference values from the deviations between the memory output signals and predetermined values;
calculating correction values from the difference values; and



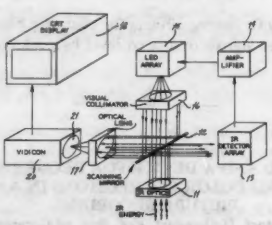
replacing the corresponding correction values in the addressable memory with the calculated correction values.

4,328,516

INTEGRAL TEST INPUT FOR ELECTRO-OPTICALLY MULTIPLEXED FLIR SYSTEM

Michael J. Colpack; Edward Pasko, both of Orlando, and Richard W. Johnson, Clearwater, all of Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 17, 1980, Ser. No. 207,567
Int. Cl.³ H04N 5/33
U.S. Cl. 358—113 **3 Claims**



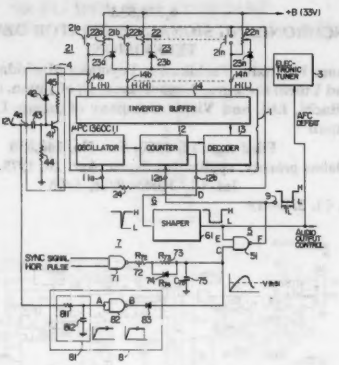
1. In a forward-looking infared system of the type including an infared detector array,
a light-emitting array coupled responsive to the detector array, and
a video chain having an electro-optical multiplexer whose target receives light from the light-emitting array, and a video display responsive to the electro-optical multiplexer,
an improvement for testing the operation of the video chain, comprising
a light source so mounted as to project light onto the target of the electro-optical multiplexer, and
means to energize the light source when it is desired to test the video chain,
whereby the video chain may be tested without energizing the infared detector array or light-emitting array.

4,328,517

CHANNEL SELECTION APPARATUS FOR TELEVISION RECEIVER

Shutoku Watanabe, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Jun. 3, 1980, Ser. No. 156,016
Claims priority, application Japan, Jun. 4, 1979, 54-68953
Int. Cl.³ H04N 5/44
U.S. Cl. 358—191.1 **7 Claims**

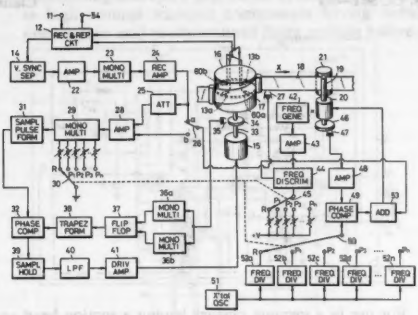


1. A channel selection apparatus for a television receiver comprising:
an electronic tuner which is preset to be responsive to a plurality of channel selection tuning potentials for tuning the television receiver to different television channels corresponding to the channel selection tuning potentials;
selecting means for selecting one of said plurality of channel selection tuning potentials to apply said selected potential to said electronic tuner;
first circuit means for causing said selecting means to sequentially shift said selected potential through the plurality of channel selection tuning potentials;
defeat signal output means for producing a defeat signal when said selected potential is shifted;
a synchronizing signal discrimination circuit for discriminating the presence and the absence of a synchronizing signal of a television signal to produce a discrimination output of a first level when said synchronizing signal is absent and a discrimination output of a second level when said synchronizing signal is present;
a second circuit means responsive to said defeat signal for producing a pulse output signal of a second level having a predetermined duration when said second circuit means receives said defeat signal, and producing an output signal of a first level at the end of said predetermined duration; and
a first gate circuit having input terminals thereof connected to receive the discrimination output of said synchronizing signal discrimination circuit and said output signals of said second circuit means and having an output terminal thereof connected to said first circuit means,
said first gate circuit being operative to supply a sequential shift signal of a second level to said first circuit means only when the outputs of said synchronizing signal discrimination circuit and said second circuit means are both at said first level to initiate the channel sequential shift operation, and to supply an output signal of a first level in all other cases to stop the channel sequential shift operation, so that said channel sequential shift operation is repeated so long as the output of said synchronizing signal discrimination circuit is at said first level and said sequential shift operation is stopped when the output of said synchronizing signal discrimination circuit assumes said second level.

4,328,518
VIDEO SIGNAL, SPEED-CHANGE REPRODUCING SYSTEM

Singo Kawata, Yokosuka, and Takashi Takano, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 18, 1980, Ser. No. 141,315
Claims priority, application Japan, Apr. 18, 1979, 54-47443
Int. Cl.³ H04N 5/79
U.S. Cl. 360—10 **5 Claims**



1. A video signal, speed-change reproducing system for reproducing video signals which are recorded by a pair of alternately active rotary recording heads mounted on diametrically opposed sides of a rotating member, said video signals being recorded on video tracks disposed contiguously and obliquely relative to the tape longitudinal direction, said recording heads having gaps of mutually different azimuth angles, the reproducing system comprising:

means comprising a capstan and a motor for driving the capstan in rotation, said capstan driving the tape in tape travel or stopping the tape;

control means comprising means for supplying a plurality of signals of predetermined frequencies corresponding to predetermined tape speeds used for reproducing modes, means for selectively deriving one of said predetermined frequency signals corresponding to a selected reproducing mode, and means for controlling the rotation of the capstan motor in response to the selected frequency signal; and

a pair of reproducing heads which are used exclusively for reproducing, said heads being mounted on diametrically opposed sides of a rotational member, both gaps of said reproducing heads having the same azimuth angle which corresponds to an azimuth angle of the gap on either one of said recording heads.

4,328,519
READING SECURE MAGNETIC DOCUMENTS

Lewis J. Way, Sunninghill, United Kingdom, assignor to E M I Limited, Hayes, England

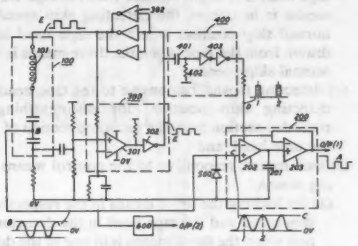
Filed Oct. 25, 1979, Ser. No. 88,148
Claims priority, application United Kingdom, Nov. 11, 1978, 44183/78
Int. Cl.³ G11B 5/02, 5/12
U.S. Cl. 360—67 **9 Claims**

1. A magnetic reading apparatus for generating electrical signals indicative of information recorded in a magnetic track as a variation of a magnetic property therealong, the apparatus comprising,

a gapped magnetic core,

a series tuned circuit including a coil wound upon said core for sensing material in said track disposed in the vicinity of the core gap,

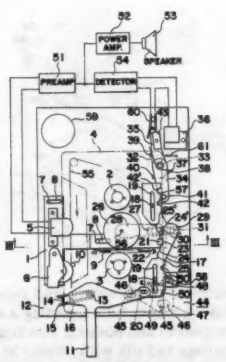
means for causing the tuned circuit to oscillate always at a fixed resonant frequency of the circuit as the material in said track is sensed and output means comprising amplifier means, responsive to pulses substantially coincident with the peaks of oscillations generated by the tuned circuit, to sample the amplitude of said oscillations and a capacitor store and voltage follower for cooperating with said amplifier means to generate an output signal representing the envelope of signals generated by the tuned circuit, a variation in the amplitude of said output signal as the track is sensed being indicative of a variation of magnetic property of material along the track and the information recorded therein.



4,328,520
TAPE TRANSPORT DEVICE

Mitsuo Iwata; Hajime Wada; Tomoyuki Iwasa, and Kunio Tsuchino, all of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of, Japan

Filed Oct. 19, 1979, Ser. No. 86,316
Claims priority, application Japan, Oct. 19, 1978, 53-130192
Int. Cl.³ G11B 15/44, 15/46, 15/10
U.S. Cl. 360—73 **15 Claims**



1. A tape transport for moving a tape having a plurality of recorded sections separated by non-recorded sections, the tape transport comprising:

(a) a tape head mounted on the transport;

(b) a drive means for driving the tape, the drive means being shiftable between a play speed, a detecting fast forward skip speed, a fast forward normal skip speed, a detecting rewind skip speed and a normal rewind skip speed;

(c) a single manually operable control lever means rotatable in a first direction to actuate fast forward select means for shifting the drive means between the play speed and the fast forward skip speeds, wherein the forward skip speed is selected depending upon the degree of rotation, and rotatable in a second direction to actuate rewind select

means for shifting the drive means between the play speed and the rewind skip speeds, wherein the rewind skip speed is selected depending upon the degree of rotation;

(d) a control means, responsive to the select means, for moving the tape head to a play position where the tape head is in full contact with the tape when the drive means is in the play speed, to a detecting skip position where the tape head is in slight contact with the tape when the drive means is in one of the detecting skip speeds, and to a normal skip position where the tape head is fully withdrawn from the tape when the drive means is in one of the normal skip speeds;

(e) detecting means, responsive to the tape head when in its detecting skip position, for distinguishing the non-recorded section from the recorded section of tape passing the tape head; and

(f) lock means, responsive to the control means and detecting means,

(1) for locking the drive means in the respective detecting skip speed and the tape head in the detecting skip position when the drive means is in one of the detecting skip speeds and the detecting means distinguishes one of the recorded sections passing the tape head, and

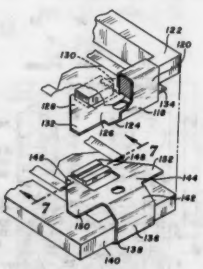
(2) for shifting the drive means from the respective detecting skip speed to the play speed and moving the tape head from the detecting skip position to the play position when the drive means is in one of the detecting skip speeds and the detecting means distinguishes one of the non-recorded sections passing the tape head.

4,328,521

GIMBAL SPRING RETAINER

Harold W. Pexton, Moore, and Robert A. Smith, Oklahoma City, both of Okla., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Apr. 7, 1980, Ser. No. 138,032
Int. Cl.³ G11B *5/58, 17/32, 21/20*
U.S. Cl. 360—104 **6 Claims**



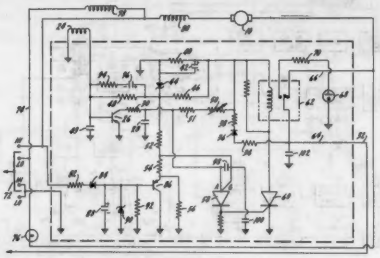
1. In an electronic data reading and recording apparatus including a housing; means for supporting a magnetic disc for rotation with respect to said housing; a carriage, and means for moving said carriage radially with respect to said disc: at least one swing arm mounted pivotally to said carriage; a head carrier mounted at its proximal end to each said swing arm, and having at its distal end a head support flexure supporting a transducing head for generally linear movement toward and away from said swing arm, and further supporting the head for pivotal movement on two axes substantially perpendicular to the direction of said linear movement and to each other; a moving means for pivoting each said swing arm between a load position wherein said head is positioned in a reading and recording relation to said disc, and an open position wherein said head is remote from the disc; and detent means integral with each said swing arm, said detent means having a landing substantially parallel to the plane of said swing arm for engaging said flexure upon movement of said head a predetermined distance from said swing arm, thereby preventing further movement of said head away from said arm, and, when so engaged, preventing said pivotal movement.

4,328,522

BRUSH SPEED SENSING CONTROL FOR VACUUM CLEANER

Fredrick W. Tryan, Lewiston, Minn., assignor to Lake Center Industries, Winona, Minn.

Filed Mar. 31, 1980, Ser. No. 135,255
Int. Cl.³ H02H *7/09*
U.S. Cl. 361—33 **7 Claims**



1. For use in a vacuum cleaner having a suction head and means for drawing air and entrained material through the head with a brush rotatably mounted in the head for loosening material on a surface being cleaned to cause entrainment thereof in the drawn air and a drive including an electric motor for rotating the brush at a normal operative speed with a connection for connecting the motor to a source of AC electric power, the improvement comprising a control for disconnecting the motor from the electric power source, the control including means for sensing the rotational speed of the brush, means for disconnecting the motor from the electric power source when the brush is rotating at a predetermined tripout speed well below its normal oprative speed, and meas for automatically varying the predetermined tripout speed in direct relation to variations in the voltage from the source of electric power.

4,328,523

METHOD AND APPARATUS FOR THE PROTECTION OF ELECTRICAL EQUIPMENT FROM HIGH VOLTAGE TRANSIENTS

Herb J. J. Seguin, Edmonton, Canada, assignor to Home Oil Company Limited, Calgary, Canada

Filed Dec. 28, 1979, Ser. No. 108,215
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—56 **22 Claims**

1. A unit for protecting electrical equipment against damage due to high voltage surges or transient components which periodically emanate from the power distribution system supplying the electrical equipment with operating current, said unit comprising:

(a) a casing;

(b) ground plate means for capping one end of said casing and for providing an electrical ground source;

(c) elongated input conductor means mounted on but electrically insulated from said ground plate means for conducting operating current from the power distribution system to the interior of said casing;

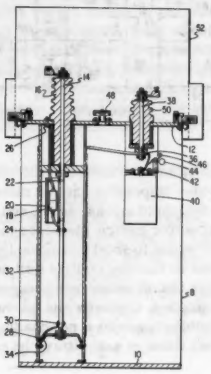
(d) output conductor means mounted on but electrically insulated from said ground plate means for conducting operating current from the interior of said casing to the electrical equipment;

(e) spark gap means connected between said elongated input conductor means and said ground plate means for dissipating the energy in high voltage transient components ema-

nating from the power distribution system with voltages greater than a predetermined firing voltage;

(f) variable resistor means connected between said output conductor means and said ground plate means for dissipating the energy in high voltage transient components emanating from the power distribution system with voltages below said predetermined firing voltage and above a predetermined minimum voltage; and

(g) filter means for conducting operating current between said elongated input conductor means and said output conductor means while providing a time delay sufficient for enabling said spark gap means to dissipate the energy in high voltage transient components having voltages greater than said predetermined firing voltage before the



high voltage transient components having voltages greater than said predetermined firing voltage reach the electrical equipment, said filter means including:

(1) an inductor winding connected between said elongated input conductor means and said output conductor means,

(2) a capacitor connected between said output conductor means and said ground plate means, and

(3) a winding former means mounted in the interior of said casing to support said inductor winding and to provide an air core for said inductor winding, said winding former means having a former structure with a hollow interior through which said elongated input conductor means extends and within which said spark gap means is positioned.

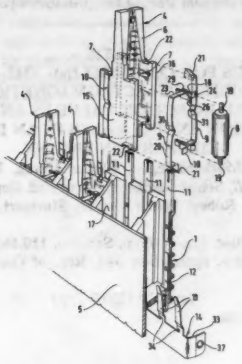
4,328,524

CABLE HEAD WITH PROTECTION FOR A TELEPHONE EXCHANGE DISTRIBUTOR

Jacques E. Nozick, Paris, France, assignor to C.T.M., Paris, France

Filed Jun. 2, 1980, Ser. No. 155,822
Claims priority, application France, Oct. 8, 1979, 79 24976
Int. Cl.³ H02H *1/04, 3/22*
U.S. Cl. 361—119 **21 Claims**

1. A protective cable head for a telephone exchange distributor, including a plurality of modular connection units comprising a base of insulating material carrying at least one earthing component and pairs of connection members disposed both at the rear of the base, next to cables which are to be connected, and at the front of the base, next to application jumpers, said units being arranged on a channel for passing through the cables which are to be connected, characterized by: at least one protection module for each connection unit which can be plugged into the base from the front, said module consisting essentially of a body of insulating material having two side-housings for individually receiving two lightning arresters, and two pairs of wrap-around contact components mounted on the body for establishing electrical contact between the front and rear connection members arranged face to face and for establishing electrical contact with the earthing component, each pair of contact components including means for electrically



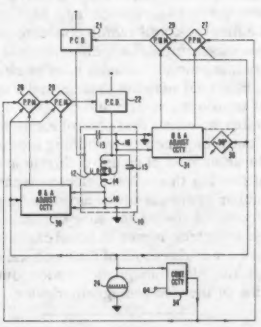
mounting a lightning arrester and for retaining said lightning arrester in its housing, and means for reinforcing the clamping of tails of the lightning arrester upon the plugging of the module into the base.

4,328,525

PULSED SINE WAVE OSCILLATING CIRCUIT ARRANGEMENT

Jay W. Allen, Los Gatos, and Peter J. Granata, San Martin, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1980, Ser. No. 163,594
Int. Cl.³ H01H *47/22*
U.S. Cl. 361—152 **12 Claims**



1. A pulsed sine wave oscillating circuit arrangement comprising

a resonant circuit including an inductor through which current flow is to be accurately controlled and a capacitor substantially connected in paralled with said inductor, and having a sampling resistor in series circuit with said inductor,

said resonant circuit having an effective damping resistance element in parallel therewith,

a source of electric pulses of substantially constant pulse repetition rate,

pulsing circuitry coupled to said pulse source and to said circuit for applying pulsated current to said resonant circuit, and

(characterized by)

servo circuitry having an input circuit connected across said sampling resistor and an output circuit connected to said pulsing circuitry for delivering to said resonant circuit, a pulse of electric energy in each cycle of operation substantially replacing that dissipated in said effective damping resistance element during the previous cycle.

4,328,526

APPARATUS FOR CONTROLLING THE CURRENT THROUGH AN ELECTROMAGNETICALLY ACTUATABLE INJECTION VALVE IN AN INTERNAL COMBUSTION ENGINE VALVE IN AN INTERNAL COMBUSTION ENGINE

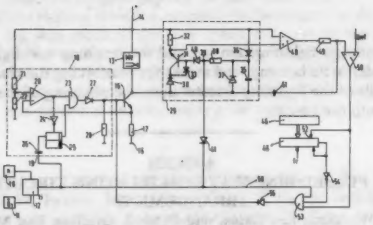
Peter Dilger, Markgröningen; Günter Hönig, Ditzingen, and Helmut Kauff, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 7, 1980, Ser. No. 110,163

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1979, 2900420

Int. Cl.³ H03K *1/14*

U.S. Cl. 361—154 **12 Claims**



1. An apparatus having a voltage source for controlling the electrical current through an electromagnetic device, having a first electrical switching means and a first electrical current measuring device connected in series with the electromagnetic device across the voltage source, and having a free-running circuit and a first threshold switch connected to the first electrical current measuring device, characterized in that:

the free-running circuit includes a series circuit made up of second electrical switching means and a second electrical current measuring device; and

the apparatus includes a first control means for time-dependently controlling the first switching means in accordance with the attainment of an upper threshold of the electrical current flowing through the electromagnetic device during a pickup operation of the electromagnetic device, and second control means for time-dependently controlling the first switching means in accordance with the attainment of a lower threshold of the electrical current flowing through the electromagnetic device during a holding operation of the electromagnetic device.

4,328,527

SELECTIVE ULTRAVIOLET SIGNAL AMPLIFIER CIRCUIT

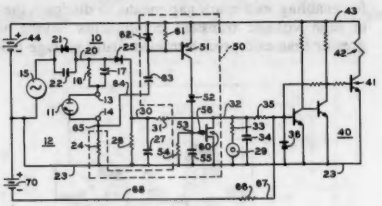
William R. Landis, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 23, 1980, Ser. No. 199,898

Int. Cl.³ H01H *47/24*

U.S. Cl. 361—175 **5 Claims**

1. A flame detection circuit means adapted to be connected to an ultraviolet responsive tube positioned to detect a flame, including: input circuit means having terminals adapted to be connected to said ultraviolet responsive tube with said input circuit means powered by an alternating current potential source means; said input circuit means further including capacitor means and impedance means in series circuit with said terminals and said alternating current source means to provide a current for cyclically charging and discharging said capacitor means when said ultraviolet tube is exposed to said flame; said ultraviolet tube conducting with a characteristic pulse pattern including a sharp change in current flow through said tube when flame is present; integrating means connected to an output of said input circuit means to integrate a portion of said current to thereby provide a signal voltage when said tube is exposed to said flame; flame amplifier means having an input connected to said integrating means and an amplifier output to



control switch means in response to the presence or absence of said flame; pulse responsive circuit means having an input connected to said input circuit means, and an output including normally conductive switch means connected to said flame amplifier input means to short circuit said signal voltage at said amplifier means to thereby control said amplifier means; said pulse responsive circuit means being responsive to said ultraviolet tube conduction characteristic to switch said normally conductive switch means to a nonconductive state upon the presence of said flame at said ultraviolet tube.

4,328,528

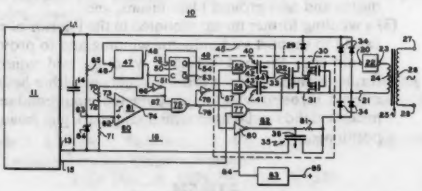
TWO-WIRE CONDITION CONTROL CIRCUIT MEANS

Arlon D. Kompelien, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 8, 1980, Ser. No. 214,379

Int. Cl.³ H01H *47/26*

U.S. Cl. 361—211 **10 Claims**



1. A two-wire solid state condition control device adapted to be connected to an alternating current voltage source through a load wherein the electric power to energize said condition control device is periodically drawn through said load, including: series charging circuit means having a pair of terminals and including rectifier means and charging switch means connected in series circuit with energy storage means to said pair of terminals which are adapted to be connected to said load and said alternating current potential source; solid state switch means connected across said terminals to controllably energize said load from said voltage source; voltage controlled oscillator means including output means having an output voltage at a frequency which is nominally a multiple of the frequency of the alternating current potential source; said voltage controlled oscillator means having an input which alters the voltage controlled oscillator means output frequency above and below said nominal frequency of said oscillator means; logic switching means having an input connected to said voltage controlled oscillator output means, and having switchable

output means connected across said solid state switch means and to said voltage controlled oscillator input means to control said voltage controlled oscillator means; comparator means connected to compare a voltage across said energy storage means and the voltage controlled oscillator means output voltage; said comparator means having output means with said comparator output means changing state upon the voltage across said energy storage means reaching a predetermined value; charging logic means having input means connected to said voltage controlled oscillator output means and said comparator output means; and said charging logic means having output means connected to control said series charging switch means and said solid state load switch means; said charging logic output means controlling said solid state switch means and said series charging switch means to periodically supply energy to said energy storage means from said terminals by causing said solid state switch means to become nonconductive in response to the voltage controlled oscillator output means at approximately the time at which said alternating current voltage passes through its zero voltage phase, and simultaneously causing said series charging switch means to become conductive.

4,328,529

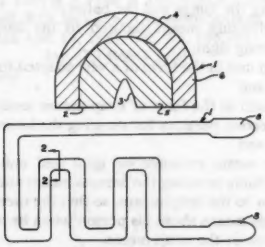
SILICON CARBIDE IGNITERS

Frank J. Hierholzer, Jr., Florissant; John A. Ancona, Affton, and Gerald L. Shelton, St. Louis, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 832,555, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 513,729, Oct. 10, 1974, abandoned. This application Sep. 27, 1979, Ser. No. 79,424

Int. Cl.³ F23Q *7/00*

U.S. Cl. 361—266 **7 Claims**



1. An electrical resistance igniter comprising a monolithic silicon carbide linear member having a hot zone formed as a loop and a pair of adjacent contact zones formed unitarily with said hot zone, and a pair of electrical contacts connected to said contact zones of said monolithic linear member, characterized in that said monolithic linear member includes a continuous groove extending downwardly from a surface thereof substantially through its entire length, and in that said electrical contacts are embedded in said silicon carbide in said contact zones and are bonded to said silicon carbide by said silicon carbide.

4,328,530

MULTIPLE LAYER, CERAMIC CARRIER FOR HIGH SWITCHING SPEED VLSI CHIPS

Christopher H. Bajorek, Goldens Bridge, N.Y.; Dudley A. Chance, Danbury, Conn.; Chung W. Ho, Chappaqua, and David A. Thompson, South Salem, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,119

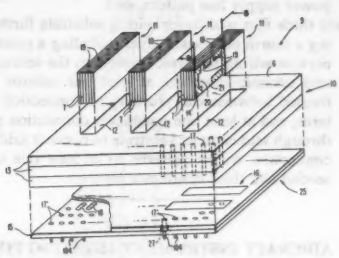
Int. Cl.³ H05K *1/18*

U.S. Cl. 361—308 **11 Claims**

1. In a module for supporting electronic circuit chips in a circuit including a planar ceramic substrate having first and second opposed surfaces;

said first surface being adapted for carrying integrated circuit chips,

a plurality of electrically conductive strips within said substrate, said strips being juxtaposed with each other and parallel to said surfaces of said substrate, said strips being employed for providing a plurality of electrical interconnections to integrated circuit chips on a first one of said opposed surfaces;



a plurality of stacked capacitive elements contained within said substrate, composed of a plurality of laminated thin conductive sheets and a plurality of thin layers of dielectric material;

each of said conductive sheets in said stack of capacitive elements being electrically connected to more than one of said plurality of conductive strips by means of coupling conductors distributed along the length of said capacitive elements within said substrate.

4,328,531

THICK FILM MULTILAYER SUBSTRATE

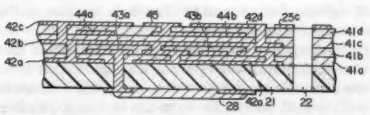
Toshio Nagashima; Takeshi Saitoh, both of Yokohama; Hiroshi Hatashita, Tokyo, and Mitsuhisa Shinagawa, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,623

Claims priority, application Japan, Mar. 30, 1979, 54-36893

Int. Cl.³ H05K *1/16*

U.S. Cl. 361—401 **1 Claim**



1. In a thick film multilayer wiring substrate comprising:

(1) a ceramic substrate having first and second surfaces opposite to one another;

(2) at least first and second layers of dielectrics formed on the first surface of said ceramic substrate, with said first layer being stacked on said substrate and said second layer being stacked on said first layer;

(3) a first conductor layer including at least a power supply line pattern, formed between the first and second layers of dielectrics;

(4) second and third conductor layers each including at least a grounded conductor pattern, said second conductor layer being formed on a surface adjacent to said ceramic substrate of the first dielectric layer and said third conductor layer being formed on a surface farthest from said ceramic substrate of the second dielectric layer; and

(5) a grounded conductor connection path formed to pass though the first and second layers of dielectrics to connect

the grounded conductor patterns of said second and third conductor layers to each other,

wherein the improvements comprise:

the grounded conductor patterns of said second and third conductor layers being formed to extend to oppose each other via the two layers of dielectrics so that said power supply line pattern is located between the two layers of dielectrics where the grounded conductor patterns extend, whereby capacitance is established between the power supply line pattern and the grounded conductor patterns to reduce a characteristic impedance of the power supply line pattern, and

said thick film multilayer wiring substrate further comprising a fourth conductor layer including a plurality of connection wiring patterns, formed on the second surface of said ceramic substrate; at least one resistor layer being formed between said plurality of connection wiring patterns; and at least one conductor connection path passing through said ceramic substrate to connect said plurality of connection wiring patterns to at least one of said first, second and third conductor layers.

4,328,532

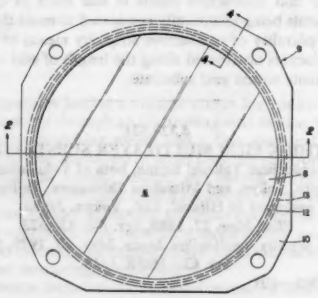
AIRCRAFT INSTRUMENT LIGHTING FIXTURE

Richard A. Smith, Urbana, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 29, 1980, Ser. No. 221,066

Int. Cl.³ F21V *9/14*

U.S. Cl. 362—19 **7 Claims**



1. A lighting fixture used to illuminate the face or dial of an instrument, comprising:

(a) a housing mountable atop the instrument and having, (i) a centrally disposed opening through which the face of the instrument can be viewed, and (ii) a continuous inner wall spaced outwardly from the opening, relative to the center axis of the opening;

(b) an electroluminescent lamp located adjacent the inner wall of the housing between the wall and opening and being at least partially longitudinally coextensive with the wall; and

(c) means covering the electroluminescent lamp for preventing a viewer of the instrument face from seeing the ring of light created around the face of the instrument by the electroluminescent lamp during operation, and for polarizing light emitting from the lamp.

4,328,533

ILLUMINATED SAFETY GARMENT

Ernest Q. Paredes, 461 S. 74th Pl., Mesa, Ariz. 85208

Filed Feb. 26, 1979, Ser. No. 15,381

Int. Cl.³ F21L *15/06*; G02B *5/12*

U.S. Cl. 362—108 **6 Claims**

1. Safety garment apparatus adapted to be worn in selective attached combinations of separate units of the apparatus by a user, comprising, in combination:

a first unit in the form of harness means for supporting an electrical illumination system, including

a first portion adapted to be disposed on one shoulder of the user,

a first lamp assembly disposed on the first portion at the user's shoulder,

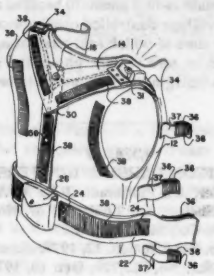
a second portion adapted to be disposed on the other shoulder of the user,

a second lamp assembly disposed on the second portion at the user's other shoulder,

a belt adapted to be secured around the user's waist,

means for securing the first and second portions to the belt,

battery means secured to the belt of the user's back,



wires extending from the battery to the first and second lamps, and

switch means secured to the belt for connecting and disconnecting the lamps and the battery;

light reflecting means secured to the harness means for reflecting light;

a second unit in the form of a vest adapted to be worn by the user; and

a third unit in the form of strap means securable to the first and second portions for securing the harness means to the user; and

fastener means mounted on each said unit for selectively detachably securing the harness means alternatively to the vest or to the strap means, so that the user may secure the harness means about his person when he is wearing either the vest or the strap means.

4,328,534

CANDLE TYPE ILLUMINATING LAMP

Kenichi Abe, Ohmiya, Japan, assignor to Kabushiki Kaisha Sofard, Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,326

Claims priority, application Japan, Oct. 8, 1979, 54/138465[U]

Int. Cl.³ F21V *23/00*

U.S. Cl. 362—295 **3 Claims**

1. A candle type illuminating lamp comprising:

a lamp body;

an electromagnet positioned within said lamp

a movable body positioned within said lamp body;

a wick type bulb mounted on said movable body and positioned outwardly of said lamp body;

relatively weak spring means for supporting said movable body and said bulb for movement generally axially of said lamp body;

a magnetic member attached to said movable body and adapted to be attracted by said electromagnet; and

electric circuit means intermittently for energizing said electromagnet and causing said magnetic member to be attracted thereto, thereby moving said movable body and

said bulb in a first direction against the force of said spring means, and interrupting said energizing, whereby said

spring means move said movable body and bulb in a second direction.

4,328,535

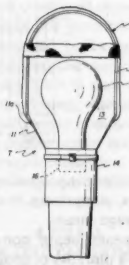
SAFETY DEVICE FOR A TROUBLE LIGHT

James W. Cornell, P.O. Box 155, Altamonte Springs, Fla. 32701

Filed Apr. 16, 1980, Ser. No. 140,783

Int. Cl.³ B60Q *3/04*

U.S. Cl. 362—362 **7 Claims**



1. A safety device for a trouble light of the type including a reflector housing of cup-shaped configuration having an interior and a marginal edge defining an opening for access to said housing interior, a base portion on said housing, a socket in said base portion arranged to be connected to an associated source of electric power, said socket being adapted to accommodate a light bulb with said bulb disposed at least partially in said housing interior and a guard mounted on said housing in enclosing relationship with said opening for protecting said bulb from damage comprising, a flexible pad of heat resistant sheet material having a shape corresponding generally to the shape of said housing and means for mounting said pad on said housing in overlying relationship with the outer surface of said housing to prevent inadvertant body contact and burning with said housing which is in a heated condition during use.

4,328,536

ARRANGEMENT IN WORKING LAMPS

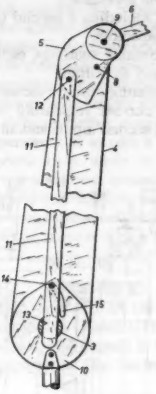
Roger Wallmark, Fullriggaregatan 19, S-421 74 Göteborg, Sweden

Filed Jan. 7, 1980, Ser. No. 110,092

Claims priority, application Sweden, Feb. 9, 1979, 7901156

Int. Cl.³ F21M *3/18*

U.S. Cl. 362—427 **3 Claims**



1. An arrangement in working lamps of the kind comprising an upper pivotable arm, light fittings supported at the outer end of said upper arm, a lower pivotable arm, a housing at the lower end of said lower pivotable arm, a horizontal shaft in said housing, said lower pivotable arm arranged for pivotal movements about said horizontal shaft, a segment interconnecting said pivotable arms, a first and a second pivot shafts arranged on said segment, each one of said pivotable arms hingedly connected to said segment so as to pivot about its respective one of said first and second pivot shafts, the improvement comprising a rail extending essentially in parallel with said lower pivotable arm, a third pivot shaft arranged on said segment, said rail pivotally connected to said segment so as to pivot about said third pivot shaft, a guide means, said rail axially displaceable in said guide means relative to said lower pivotable arm, a pin-and-slot coupling arrangement, said rail cooperating with said housing by means of said pin-and-slot coupling arrangement, said slot serving as a track to guide said pin and extending in a curve, from a maximum radial distance from the lower pivot shaft of said lower pivotable arm to a maximum distance from said shaft, in addition to which said slot serves to take on one of its edges any moments of load exerted by said light fittings in any one of their set positions and transmitted via said upper pivotable arm, said segment and said rail.

4,328,537

CIRCUIT ARRANGEMENT FOR LIMITING AND REGULATING THE COLLECTOR CURRENT OF THE CONTROL ELEMENT TRANSISTOR OF A SWITCHING NETWORK COMPONENT

Erich Schmidtner, and Ratko Kosorcic, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 12, 1981, Ser. No. 242,978

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019906

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **7 Claims**

1. A circuit arrangement for limiting and regulating the collector current of a transistor having a collector, an emitter and a base and in a switching network component which

comprises a current transformer including a primary connected in series with the collector and a secondary, said circuit arrangement comprising:

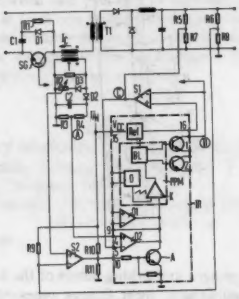
a variable resistor, including a first tap, and a diode connected in series, the series combination connected across said secondary, the setting of said variable resistor representing the maximum collector current;

a half-wave rectifier, including a charging capacitor, connected across the secondary;

a voltage divider, including a second tap, connected across said charging capacitor;

first and second bistable switches, each including first and second inputs and an output;

an integrated regulating module including a reference voltage source, a current regulating operational amplifier having first and second inputs and an output, a disconnect



device including an input and operable to disconnect the collector current, and at least one output connected to and controlling said base;

said first input of said first bistable switch connected to said reference voltage source, said second input of said first bistable switch connected to and driven by said module output, and said output of said first bistable switch connected to said second input of said current regulating operational amplifier, said first input of said current regulating operational amplifier connected to and sensing the voltage at said second tap as representing the voltage across said charging capacitor; and

said first input of said second bistable switch connected to a reference potential, said second input of said second bistable switch connected to said first tap to sense whether the collector current is above the set maximum, and an output connected to drive said input of said disconnect device.

4,328,538

SWITCHING ARRANGEMENT TO PROTECT A COMPONENT AGAINST OVERCURRENT DUE TO MAGNETIC SATURATION OF AN INDUCTOR

Werner Pollmeier, Verl, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 140,468

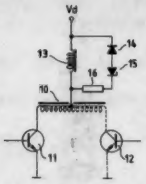
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916775

Int. Cl.³ H02H 7/122

U.S. Cl. 363—56 **13 Claims**

1. In a circuit comprising a switching component which is serially connected with a first inductor to a voltage source providing a voltage Vd, wherein said switching component is characterized by a cutoff response time definable as Δt to an overcurrent cutoff, an arrangement for protecting said component against excessive overcurrent as a result of full magnetic saturation of said first inductor, the arrangement comprising:

a second inductor connected in series with said component and said first inductor across said voltage source, said second inductor being characterized by an inductance value which is a function of Vd, Δt and the inductance of the first inductor, whereby even when the first inductor is



fully saturated the overcurrent to said component does not exceed a preselected maximum value, definable as Jmax, during Δt.

4,328,539

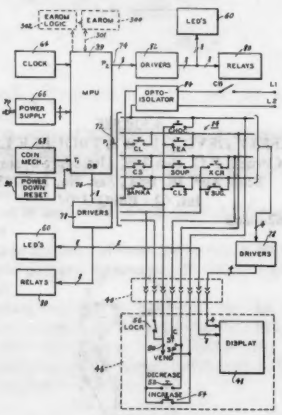
SEQUENCE CONTROLLER WITH MICROPROCESSOR

Stephen E. Heeger, Evansville, Ind., assignor to AMF Incorporated, White Plains, N.Y.

Division of Ser. No. 928,905, Jul. 28, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 101,698

Int. Cl.³ G05B 19/04

U.S. Cl. 364—144 **18 Claims**



1. A sequence controller for producing a plurality of signals at programmable times, comprising, in combination:

first and second storage means,

said first storage means being non-alterable and storing representations of a plurality of programmed operations to be preformed in sequence,

said second storage means being alterable and storing representatives of a plurality of programmable start and stop times, at which selected ones of plural operations are to be started or stopped,

timing means for timing a cycle of operation of said sequence controller, and for producing signals corresponding to time intervals within such cycle of operation,

coincidence determining means responsive to signals from said first storage means for comparing signals of said timing means with all of the signals of said second storage means and for determining a coincidence between said timing signals and each of said programmable times,

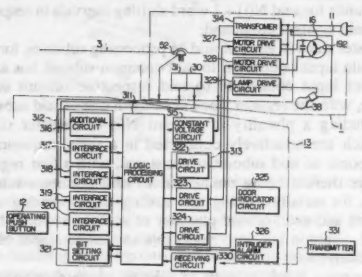
and output means responsive to said coincidence determining means for producing a plurality of output signals and for changing the levels of said output signals at times corresponding to said programmable start and stop times,

said coincidence determing means performing said comparing independently of said output signals.

4,328,540
DOOR OPERATION CONTROL APPARATUS

Shigeru Matsuoka; Toshio Tsubaki; Takeshi Tokunaga; Seiji Yonekura; Kenji Nakamura, and Mitsuo Suzuki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1980, Ser. No. 123,086
Int. Cl.³ E05F *15/10*; H02H *7/085*
U.S. Cl. 364—167 **80 Claims**

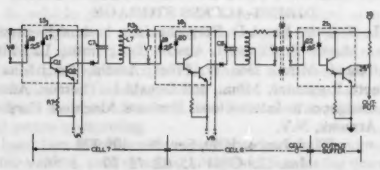


1. A door operation control system comprising driving means for driving a door between open and closed positions in response to successively received door operation command signals; first memory circuit means for storing door control data in the form of a combination of command codes, program counter means for designating and updating the addresses of command codes in said first memory circuit means, control means for reading out command codes from said first memory circuit means in accordance with the state of said program counter means, command register means for temporarily storing command codes read out of said first memory circuit means, command decoder means for decoding the command code data stored in said command register means, operational processing circuit means for performing logical operations according to said command codes, second memory circuit means for temporarily storing the operating state and the direction of movement of said door in accordance with the output of said operational processing circuit means, input-output circuit means connected to said command decoder means and responsive to various conditions of said door as indicated by said second memory circuit means and a door operation command signal for controlling said door driving means.

4,328,541
FAIL-SAFE DIGITAL COMPARATOR

Richard D. Campbell, Swissvale, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed May 23, 1980, Ser. No. 152,884
Int. Cl.³ G06F *7/04*
U.S. Cl. 340—146.2 **12 Claims**

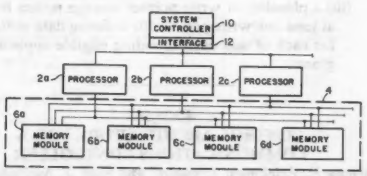


1. A vital digital comparator arrangement, comprising,
(a) a pair of digital word register means, each having the same number of storage stages for separately storing in parallel format a multi-digit word,
(b) a comparator means including a plurality of comparator cells, one associated with each corresponding pair of register storage stages and optically coupled in a series chain for at times passing a test signal of preselected characteristic through said chain from highest to lowest order cell,
(c) generator means operable for producing said test signal of preselected characteristic and coupled for applying that signal to said highest order comparator cell, and
(d) a separate interface element coupled to each corresponding pair of storage stages for producing an actuating signal only when the stored word digits are complementary,
(e) each interface element further coupled for actuating the associated comparator cell to pass a signal of said preselected characteristic only when an interface actuating signal and said test signal are present, whereby only the presence of a preselected characteristic output signal from the lowest order comparator cell indicates that the words stored in said pair of register means are complementary.

4,328,542
SECURE IMPLEMENTATION OF TRANSITION MACHINE COMPUTER

Mark S. Anastas, Auburn, and Russell F. Vaughan, Enumclaw, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 7, 1979, Ser. No. 91,877
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **46 Claims**



1. A hardware executive apparatus for use in a multiprocessor system operable for enabling a high degree of multilevel data security, said apparatus controlling operation of a plurality of data processors for solving an algorithm defined by a plurality of application programs and a control program, said data processors connected for accessing application program memory storage means for storing said application programs and data memory storage means for storing data associated with said application programs, said data memory storage means including at least a common data memory area accessible by said plurality of data processors, said plurality of data processors generating variable status indications determined variably upon execution of said application programs, each of said application programs stored in contiguous storage locations of said application program memory storage means, said hardware executive apparatus connected to said plurality of data processors and executing said control program and comprising:
(a) a status storage means for storing current status indications S_j corresponding to data conditions defined on elements of a data set appropriate for determining eligibility of the application programs, whereby said stored status indications correspond to data conditions which are relevant for enabling execution of application programs by said plurality of processors which are utilized in solving said algorithm;
(b) relevance storage means for storing groups, i, of binary relevance indications R_{ij} each group corresponding to the relevance of said status indications to the i^{th} one of said application programs where i is an integer designating one of said groups and corresponding one of said application

programs, and j is an integer designating one of said status indications;

(c) means connected to said status storage means and connected to receive said variable status indications from said data processors for updating said current status indications stored in said status storage means at the completion of execution of each application program, each of said variable status indications having one value corresponding to and indicating satisfaction of a given one of said data conditions, and another value corresponding to and indicating non-satisfaction of said given one of said data conditions, said given data conditions being logical relationships involing at least one element of said data set, the value of said at least one element of said data set being determined by said data processors upon execution of said application programs;

(d) means connected to said relevance storage means and said status storage means for determining the eligibility of said application programs for execution by said plurality of processors;

(e) means responsive to said eligibility determining means and operatively connected to said plurality of data processors for enabling execution of eligible application programs by said plurality of data processors, said enabling means comprising:

(i) a plurality of execution address storage means for storing an entry-point execution address and program length indicator corresponding to each of said application programs,

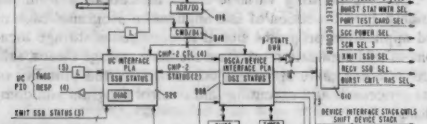
(ii) a plurality of read pointer storage means for storing at least one read pointer for defining data read address for each of said corresponding eligible application programs, and

(iii) a plurality of write pointer storage means for storing at least one write pointer for defining data write address for each of said corresponding eligible application programs.

4,328,543
CONTROL ARCHITECTURE FOR A COMMUNICATIONS CONTROLLER

Norman F. Brickman, Potomac, and Earl J. McDonald, Gaithersburg, both of Md., assignors to IBM Corporation, Armonk, N.Y.

Filed Mar. 25, 1980, Ser. No. 133,734
Int. Cl.³ G06F *3/00, 13/00, 15/20*
U.S. Cl. 364—200 **3 Claims**



1. A control architecture in a communications controller for connecting a control processor to a plurality of M internal processing subunits operating asynchronously at different data rates, comprising:

a control adapter connected between said control processor and a common subunit bus, for receiving, from said control processor, a control command for communicating with an i-th one of said plurality of M processing subunits, a plurality of N(i) data words for said i-th one of said plurality of M processing subunits, and an associated address for said i-th one of said plurality of M processing subunits and outputting in response to said control command, an operating code word and said plurality of N(i) data words on said common subunit bus, and outputting a subunit select signal on a respective i-th one of M subunit select lines to said i-th one of said plurality of M subunits in response to said associated address;

said controller adapter including a shift interval storage having a plurality of M values therein, each i-th one of said values having a magnitude of at least N(i)+1 and representing the number of word shifting intervals to be associated with said i-th subunit, for outputting a stack shift signal on a stack shift bus common to all of said subunits for said N(i)+1 word shifting inervals in response to said control command;

a register stack in each of said M processing subunits, having a data input connected to said common subunit bus and a select input connected to said respective subunit select line, with the register stack in said i-th one of said subunits including a plurality of at least N(i)+1 register stages which are selectively connected in a serial sequence in response to said subunit select signal, with a first register stage thereof being connected to said common subunit bus, for serially shifting and storing said operating code word and each of said plurality of N(i) data words from said common bus, into respective sequential stages of the register stack;

said register stack in each of said M processing subunits having a stack shift input connected to said stack shift bus, for receiving said stack shift signal for said N(i)+1 word shifting intervals in said i-th one of said M processing subunits and enabling N(i)+1 shifts in said serial shifting of said register stack, transferring said operating code word and said N(i) data words from said common bus into said register stack;

said plurality of N(i)+1 register stages being selectively disconnected from said serial sequence and respectively connected to parallel outputs in response to the absence of said subunit select signal;

an operating code decoder in each of said processing subunits, having an input selectively connected to said parallel output of one of said stages in a respective one of said register stacks, for decoding said operating code in said processing subunit;

said plurality of at least N(i)+1 register stages in said i-th one of said M processing subunits including a plurality of N(i) register stages having their said parallel outputs respectively connected to a data input of a utilization device in said respective subunit, said respective utilization device having a control input connected to an output of said operating code decoder in said respective subunit;

said utilization device in said respective subunit reading said plurality of data words from the respective ones of said register stack stages in parallel in response to an outut from the respective said operating code decoder;

whereby a uniform interface between said control processor and said plurality of processing subunits is achieved.

4,328,544
ELECTRONIC POINT-OF-SALE SYSTEM USING DIRECT-ACCESS STORAGE

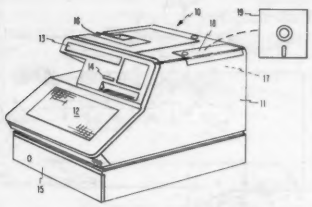
Harry L. Baldwin; Beryl D. Bergschneider, both of Rochester, Minn.; Martin E. Chamoff, Austin, Tex.; Irving L. Miller, Pine Island, Minn.; Don W. Piller, Austin, Tex.; Max J. Robinett, Rochester, Minn., and Donald L. Thorson, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,738
Int. Cl.³ G06F *15/02, 15/20*
U.S. Cl. 364—405 **9 Claims**

1. A point-of-sale terminal for recording transaction data, said terminal comprising:

programmable processing means including read/write addressable memory for holding both applications programs and data, and further including read-only memory holding routines for loading different ones of said applications programs into said read/write memory;

direct-access storage means coupled to said processing means and adapted to read and write a single removable, non-volatile storage medium holding both said applications programs and said transaction data;



input means coupled to said processing means for receiving said transaction data from an operator;

output means coupled to said processing means for displaying said transaction data;

cash-handling means controlled by said processing means in response to said applications programs; and

enclosure means for housing all the above means in a single physical package, said enclosure means further including means for inserting and removing said removable storage medium in said direct-access storage means.

4,328,545

DRIVERLESS VEHICLE AUTOGUIDE BY LIGHT SIGNALS AND TWO DIRECTIONAL DETECTORS

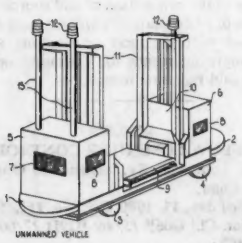
James R. Halsall, Runcorn; Michael H. E. Larcombe, Cannon Park; James R. Robertson, Northwich, and Mark A. M. Rogers, Chester, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 1, 1979, Ser. No. 62,902

Claims priority, application United Kingdom, Aug. 1, 1978, 7831850

Int. Cl.³ G06F *15/20*; H04M *1/02*; G01C *1/00*

U.S. Cl. 364—424 **8 Claims**



1. A vehicle moveable within a predetermined area and having navigational means for determining its position and orientation, in combination with a plurality of beacons which are located at stations fixed with respect to the area such that the vehicle, when in any position within the area, can receive light from beacons of at least two fixed stations; the navigational means comprising:

at least two direction-sensitive light detectors mounted on the vehicle, each detector comprising means for detecting light which it receives from the beacons, and means responsive to the detection of that light for indicating the direction from which the light is received so that the bearings of each fixed station with respect to the orientation of the vehicle are obtained, and

means for correlating the bearings obtained by the light detection-responsive means with the positions of the fixed stations with respect to the area, and the positions of the detectors with respect to the vehicle.

4,328,546

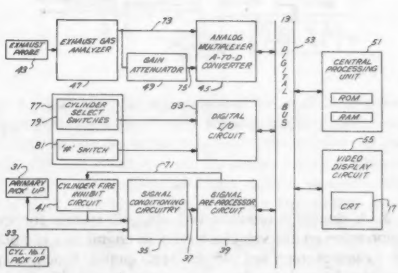
APPARATUS FOR EVALUATING THE PERFORMANCE OF AN INTERNAL COMBUSTION ENGINE USING EXHAUST GAS EMISSION DATA

Keith A. Kreft, Mt. Prospect; Alan E. Rossetti, Glenview; Michael F. Lynn, Berwyn, and Jesse W. Wagoner, Dundee, all of Ill., assignors to Sun Electric Corporation, Crystal Lake, Ill.

Filed Apr. 15, 1980, Ser. No. 140,586

Int. Cl.³ G01L *25/00*; F02D *17/00*

U.S. Cl. 364—424 **23 Claims**



1. An internal combustion engine analyzer comprising:

monitoring means connectable to an internal combustion engine for monitoring the operation of the engine for responsively generating timing signals representing the time of firing of each of the cylinders of the engine;

preprocessor means connected to said monitoring means for receiving said timing signals, said preprocessor means selectably operable for inhibiting a selected cylinder of the engine from firing;

exhaust gas measuring means for monitoring the exhaust gas output from the engine for generating a data signal representative of the quantity of a combustion by-product in the exhaust gas output;

visual display means responsive to display signals for generating a visual display; and

processor means communicating with said exhaust gas measuring means, with said preprocessor means and with said visual display means for operating said preprocessor means to inhibit a selected cylinder from firing and for receiving said data signals to provide an indication of the quantity of said combustion by-product in said gas output during firing inhibition of said selected cylinder, said processor means generating first display signals for causing said display means to visually display an indication of said quantity of said combustion by-product, and second display signals for causing said display means to visually display an indication of the cylinder number selected, in visual association with said indication of said quantity of said combustion by-product.

4,328,547

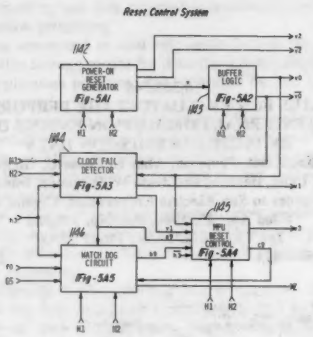
FAILURE SYSTEM FOR INTERNAL COMBUSTION ENGINE

Alan W. Barman, Oak Park, and Thomas W. Hartford, Livonia, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 881,982, Feb. 27, 1978, Pat. No. 4,264,898. This application Sep. 10, 1980, Ser. No. 185,830

Int. Cl.³ F02B *39/16;* F02D *33/00*

U.S. Cl. 364—431.09 **6 Claims**



3. A double protection fuel shut-off system for internal combustion engine vehicles having an engine block, a plurality of cylinders disposed within said engine block, a piston mounted for reciprocal movement within each of said plurality of cylinders, an electronic engine control system for generating at least one fuel control pulse, fuel injection means responsive to said at least one fuel control pulse generated by an electronic engine control system for injecting controlled quantities of fuel into selected ones of said plurality of cylinders for combustion therein, fuel pump means for supplying fuel under pressure to said fuel injection means, said electronic engine control system further including clock means utilized in initializing the performance of calculations and the like for computing fuel control commands, and means responsive to said fuel control commands for generating said fuel control pulses for operating said fuel injection means, said fuel shut-off system comprising:

logic means for monitoring the operations of said clock means and generating a clock failure signal indicative of a detected malfunction therein;

means for sensing an engine stall condition when said engine is not in a "cranking" mode of operation and for generating a stall condition signal indicative thereof; and

means responsive to only one of said clock failure signal and said engine stall condition signal for generating a signal substantially simultaneously turning off said fuel pump means to prevent the flow of fuel to said fuel injection means while disabling said fuel control pulses from operating said fuel injection means thereby affording the driver, the passengers and the vehicle itself optimal protection from fire, explosion in case of accidents, said responsive means being inhibited from generating said turn-off signal when said clock failure signal and stall condition signal exist simultaneously.

4,328,548

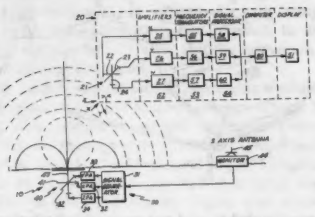
LOCATOR FOR SOURCE OF ELECTROMAGNETIC RADIATION HAVING UNKNOWN STRUCTURE OR ORIENTATION

William M. Crow, Fanwood, N.J., and Michael J. Yerbury, St. Ives, Australia, assignors to The Austin Company, Cleveland, Ohio

Filed Apr. 4, 1980, Ser. No. 137,287

Int. Cl.³ G01S *3/02*

U.S. Cl. 364—449 **9 Claims**



1. Apparatus for determining the position of a source of electromagnetic radiation relative to a remote object and the orientation of the remote object relative to the position of the source comprising:

a multicomponent radiating means of unknown orientation and structure identifying the origin of said source;

transmitter means for applying to said multicomponent radiating means electrical signals which generate a plurality of electromagnetic fields, said plurality of electromagnetic fields being distinguishable from one another;

a plurality of receiving means disposed on said remote object, said receiving means having at least three orthogonal components for detecting and measuring components of said electromagnetic fields;

said radiating means and said receiving means being adapted for operation at a separation distance sufficient to insure that the far-field components of said electromagnetic fields are substantially greater in magnitude than the near-field components of said electromagnetic fields; and

analyzing means associated with said receiving means for converting the components of said electromagnetic fields received by said plurality of receiving means into source position relative to said remote object without a priori knowledge of the orientation of said source or the relative orientation of its components with at least one ambiguous combination of orientation or position, said analyzing means comprising means for operating open loop with respect to said radiating means.

4,328,549

PROCESS FLOW COMPUTER CONTROL SYSTEM

Cecil T. Avery, Louisville, Ky., assignor to Olin Corporation, New Haven, Conn.

Filed Jan. 11, 1980, Ser. No. 111,457

Int. Cl.³ G06F *15/46;* B29D *27/00*

U.S. Cl. 364—469 **49 Claims**

1. An improved method for automatically controlling the rate of mass flow in a system having a mass mover powered by a power supply which is attenuated by a control device for transferring mass through a conduit, wherein a signal proportional to said mass flow is transmitted to an automatic control unit, characterized by the improvement which comprises, in combination;

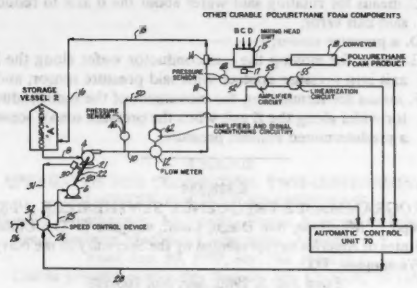
(a) entering in said automatic control unit a standard signal, S_s, representative of a desired rate of mass flow in said conduit,

(b) entering in said automatic control unit a rate of mass flow deviation range, K_1–K_2,

(c) entering in said automatic control unit an initial operating

voltage, V, and transferring a signal proportional to said V to said control device to operate said mass mover while in automatic control mode to attenuate said power supply to said mass mover, and to produce a rate of mass flow in said conduit at said initial operating voltage, V,

(d) obtaining a first signal, S_1, proportional to the actual rate of mass flow in said conduit, and conveying said first signal, S_1, to said automatic control unit,



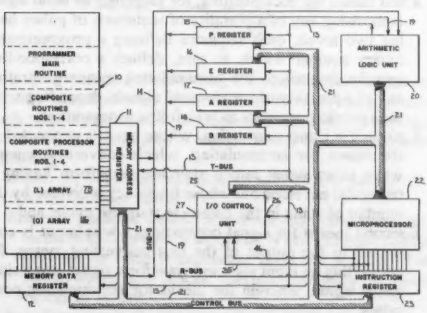
(e) comparing said S_a with said S_1 in said automatic control unit and calculating a difference, D, between said S_a and said S_1, and comparing said difference, D, with said mass flow deviation range, K_1–K_2,

(f) when said difference, D, exceeds said mass flow deviation range, K_1–K_2, switching said automatic control unit to a mode of fixed value, and thereafter transmitting a signal proportional to said initial operating voltage, V, to said control device to operate said mass mover at a fixed signal value.

4,328,550
PROGRAMMER UNIT WITH COMPOSITE CALCULATION CAPABILITY

John M. Weber, 630 Colgate Rd., Colgate, Wis. 53017

Filed Aug. 8, 1980, Ser. No. 176,269
Int. Cl.³ G05B *19/42*
U.S. Cl. 364—474 5 Claims



5. In a programmer unit which generates part programs for numerically controlled machines by processing a series of stored composite numbers and required associated sets of geometric data into a series of move codes and associated data, the improvement comprising;

means for displaying messages and data to an operator;

means for inputting data from an operator;

means coupled to said display means for geneating prompting messages to the operator which request the entry of a composite number and its required associated set of geometric data;

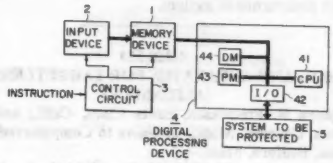
means coupled to said input means for receiving data entered by the operator which indicates the selection of a composite calculation, and in response thereto, generating prompting messages to the operator through said display means which request the entry of a composite type number and any known geometric data associated with the selected composite type number; and

means coupled to said last named means for calculating unknown geometric data associated with the selected composite type number.

4,328,551
APPARATUS AND METHOD FOR PROTECTION OF ELECTRIC POWER TRANSMISSION LINES AND THE LIKE

Mitsuru Yamaura, Hachioji; Ryotaro Kondow, Tokyo, and Kunio Matsuzawa, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 14, 1980, Ser. No. 130,569
Claims priority, application Japan, Mar. 19, 1979, 54-31017
Int. Cl.³ G06F *15/56;* H02H *3/00*
U.S. Cl. 364—492 10 Claims



1. In a protective relaying apparatus for an electric power system comprising an electrically writable memory device and a digital processing device for carrying out protective relaying operations based on values set in the memory device, wherein the improvement comprises an input device, an electrically writable memory device which includes a non-volatile memory device coupled to the digital processing device and to the input device, the input device designating addresses in the non-volatile memory device and setting values utilized by the digital processing device for the relaying operation in memory locations represented by the addresses, and a control circuit coupled to the input device and the non-volatile memory device for controlling the input device and the non-volatile memory device, the non-volatile memory device comprising volatile memory portions and non-volatile memory portions connected together in pairs such that data present in the volatile memory portions can be transferred to corresponding non-volatile portions for storage and data stored in non-volatile portions can be transferred to corresponding volatile portions for use by the digital processing device.

4,328,552
STATISTICAL CALIBRATION SYSTEM

Robert E. Stovall, 17824 Tree Lawn Dr., Ashton, Md. 20702

Filed Jan. 17, 1980, Ser. No. 112,982
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—554 11 Claims

1. A method for determining nonlinearities of a system having undetermined nonlinearities in the system output relative to the system input, comprising the steps of;

producing a random amplitude input signal for the determined system having a statistical distribution which is known;

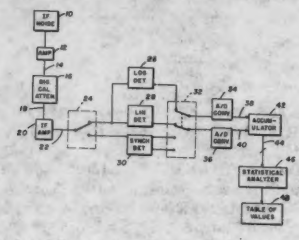
feeding the random amplitude signal into the undetermined system;

determining the probability density of the random output signal of the undetermined system;

obtaining the cumulative probability distribution of the

output signal from the probability density of the random output of the undetermined system;

equating the cumulative probability distribution of the input random signal and the cumulative probability distribution of the output signal from the undetermined system; and



deriving the system amplitude transfer function representing the unknown nonlinearities of the system from the results of equating the cumulative probabilities of the input and output signals, thereby determining the nonlinearities of the undetermined system.

4,328,553

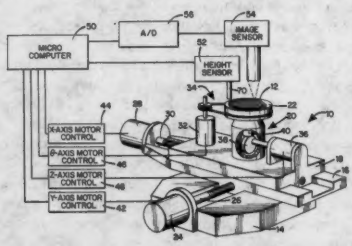
METHOD AND APPARATUS FOR TARGETLESS WAFER ALIGNMENT

Thorbjoern R. Fredriksen, Santa Clara, Calif., and Philippe Villers, Concord, Mass., assignors to Computervision Corporation, Bedford, Mass.

Continuation of Ser. No. 748,310, Dec. 7, 1976, abandoned. This application Sep. 8, 1980, Ser. No. 184,690

Int. Cl.³ G06F *15/46*; H04N *7/18*

U.S. Cl. 364—559 **8 Claims**



2. An apparatus for X, Y, and θ axis aligning a semiconductor wafer having a plurality of microcircuits formed on the wafer in a pattern of rows and columns separated by scribe lines, said apparatus comprising:

A. electro-optical means for scanning at least a portion of each of said microcircuits and of said scribe lines abutting said microcircuits along a plurality of scan lines that are parallel to one of said X and Y principal axes in a direction substantially along the scribe line to locate one edge of a scribe line along one of said microcircuits;

B. electro-optical means for scanning at least a portion of each of said microcircuits and of said scribe lines abutting said microcircuits along a plurality of scan lines that are parallel to one of said X and Y principal axes in a direction substantially along the scribe line to locate the same edge of the scribe line along another microcircuit;

C. means for determining from the location of said two microcircuit scribe line edges the θ axis error of the scribe line edges with respect to one of said X and Y principal axes; and,

D. means for rotating said wafer about the θ axis to reduce said θ axis error.

4. An apparatus for X, Y, and Z axis aligning a semiconductor wafer having a plurality of microcircuits formed on the wafer in a pattern of rows and columns separated by scribe lines, said apparatus comprising:

A. means for locating a straight line edge in said microcircuit pattern;

B. means for determining from the location of said straight line edge the θ axis error of the edge with respect to one of said X and Y principal axes;

C. means for rotating said wafer about the θ axis to reduce said axis error;

D. a pressure sensor;

E. means for moving the semiconductor wafer along the Z axis into pressure contact with said pressure sensor; and,

F. means for terminating the movement of the semiconductor wafer along the Z axis when the pressure sensor senses a predetermined contact pressure.

4,328,554

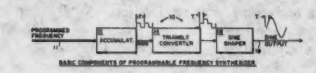
PROGRAMMABLE FREQUENCY SYNTHESIZER (PFS)

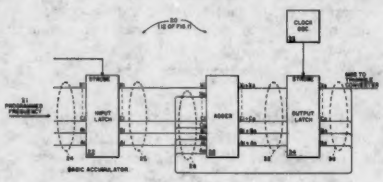
Joseph L. Mantione, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 3, 1980, Ser. No. 165,598

Int. Cl.³ H03B *19/14*

U.S. Cl. 364—721 **14 Claims**





1. A programmable frequency synthesizer comprising:

a first means for accumulating, for receiving an input signal comprising any of a plurality of sequences of pulses having two levels, each sequence defining a programmable binary number which, in turn, defines a corresponding specific frequency, the accumulating means generating any of a plurality of square-wave signals, depending upon the specific frequency to which it is programmed;

a means for signal converting, whose input is connected to the means for accumulating, which converts a square-wave input signal into a staircase waveform having a triangular envelope but whose frequency is divided by the number of stairs in the complete staircase cycle; and

a second means for signal converting, whose input is connected to the output of the first converting means, for converting an input staircase waveform signal into a sinusoidal signal; wherein the means for accumulating comprises:

an input means, which receives the input signal, and remains in one binary state until the level at its input changes whereupon it remains in another binary state whenever the input level changes again;

means for adding, having two inputs, one input being connected to the output of the input means, for adding the signals received at its inputs;

an output means, substantially identical to the input means, having two inputs, one being connected to the output of the means for adding, the output of the output means being connected to the second input to the means for adding;

whereby the output of the means for adding is a signal which is the sum of the signal at the input to the input

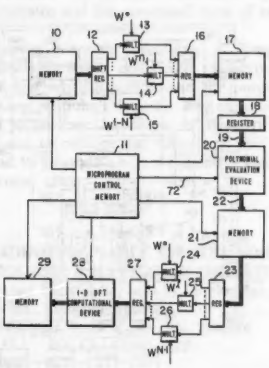
means and the signal at the output of the output means; the means for accumulating further comprising:

means, whose output is connected to the second input to the output means, for clocking the signal propagating through the output means.

4,328,555
APPARATUS FOR COMPUTING TWO-DIMENSIONAL DISCRETE FOURIER TRANSFORMS

Henri J. Nussbaumer, La Gaude, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,121
Claims priority, application France, Jul. 12, 1979, 79 18530
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—726 **6 Claims**



1. An apparatus for computing the two-dimensional discrete Fourier transform of N first blocks of N terms each, wherein each term is processed in the represent apparatus by appropriate electrical signals with N being a power of 2, said apparatus including:

means for receiving and storing said N first blocks of N terms for later access,

first multiplication means for respectively multiplying the N terms of each of said N blocks by N first complex coefficients whose value is dependent upon the position of the terms within the blocks, thereby providing N second blocks of N terms,

transformation means for converting said N second blocks of N terms into N third blocks of N terms, each of said N third blocks of N terms being a combination of said N second blocks of N terms,

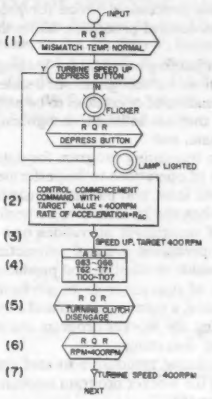
second multiplication means for respectively multiplying the N terms of each of said third blocks by N second complex coefficients whose value is dependent upon the position of the terms within the blocks, thereby providing N fourth blocks of N terms, and

means for computing the N terms of the one-dimensional discrete Fourier transform of each of said N fourth blocks of N terms, thereby providing the N^2 terms of the two-dimensional discrete Fourier transform of said N first blocks of N terms.

4,328,556
CONTROL SYSTEM OF PLANTS BY MEANS OF ELECTRONIC COMPUTERS

Masao Abe, Chofu; Haruo Kawahara, Fuchu; Yoichiro Kogure, Tama; Masahiro Maeohmichi, Musashimurayama; Tetsuo Takeuchi, Kamakura, and Norihiko Karashima, Toride, all of Japan, assignors to Tokyo Denryoku Kabushiki Kaisha and Tokyo Shibaura Denki Kabushiki Kaisha, both of, Japan, part interest to each

Continuation-in-part of Ser. No. 610,852, Sep. 9, 1975, abandoned. This application Apr. 16, 1979, Ser. No. 30,528
Int. Cl.³ G06F *15/46*; G05B *19/00*
U.S. Cl. 364—900 **6 Claims**



1. A control system for controlling a plant wherein various operations are performed if conditions calling for a particular operation are satisfied, said control system comprising:

a process input device connected to receive process input signals from said plant, said process input signals respectively representing the process variables of the plant,

a data input processing device connected to said process input device for periodically reading the process input signals and for producing status signals respectively representing the status of the process variables,

an auxiliary memory device for storing operation control procedure tables of a prescribed format, each of said operation control procedure tables containing information as to whether or not the plant is in a state calling for a certain combination of operations to be performed, in relation to the plant operation conditions required for recognition of said state, said information including a required status of certain of the process variables and further describing a combination of operations to be performed when the plant is in said state, said combination of operations including a combination of process controlling operations, a combination of process supervision operations and a combination of information display operations,

said auxiliary memory device further storing worker programs, each associated with each combination of process controlling operations and used for performing the associated process controlling operations to produce a control signal for controlling the plant,

a first register means connected to said data input processing device for periodically storing one of said status signals during a first sampling period,

a second register means connected through a gate means to said data input processing device for receiving, when said gate means is enabled, said one status signal previously stored in said first register means in a second earlier sampling period,

comparison means for comparing the contents of said first and second register means,

status change memory means responsive to said comparison means for producing an output signal representing those process variables having their status changed between said second and first sampling periods when said comparison means indicates the contents of said first and second register means do not coincide,

said gate means being enabled when said status change memory means produces said output signal,

a first selector responsive to the output signal of said status change memory means for selecting those operation control procedure tables stored in said auxiliary memory device in which the status of the process variable which has been found to have changed is described as one of the conditions for recognition of said operation,

an operation processing device for processing the selected operation control procedure tables in turn, and comprising:

a pattern judging program for judging whether or not the conditions for recognition of a state calling for a certain combination of operations to be performed are satisfied, and if they are satisfied, recognizing that the plant is in said state, and

a pattern translating program for determining the combination of operations to be performed when the process is in said state, said pattern translating program producing, when the operation to be performed is a combination of supervision operations or a combination of display operations, a signal instructing an operation for supervision or display, and producing when the combination of operations to be performed is a controlling operation, a start command and a transfer command for selecting the worker program associated with the controlling operation,

a second selector responsive to said transfer command for selecting the worker program associated with the controlling operation,

means started by said start command for reading and translating the worker program selected by said second selector and producing an instruction for control of said plant, and

a process output device responsive to the instruction from said instruction means for producing a signal for controlling said plant.

4,328,557

PROCESSOR CIRCUIT FOR VIDEO DATA TERMINAL

Jean Gastinel, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 879,974, Feb. 22, 1978, abandoned. This application May 23, 1980, Ser. No. 152,888

Claims priority, application France, Feb. 23, 1977, 77 05254

Int. Cl.³ G06F *3/153*

U.S. Cl. 364—900 **15 Claims**

1. A digital processor connected between a data bus and a conventional TV set having a CRT screen and a scanning means, said TV set operating according to a raster-scan system of m lines per frame and s frames per second, said digital processor permitting the display, in the form of discrete dots having a time base for writing, on the CRT screen, a page of alphanumeric characters having an alphabet of 2^N characters, a page of characters being composed of Y rows of character cells, each row being composed of X character cells, each character cell being composed of a matrix of 1 by p dots, and a writing cursor indicating the position of the next character which is to be inscribed, said digital processor including,

a ROM for decoding input instruction codes which enters said ROM, said ROM having: inputs connected to the data bus which carries said input instruction codes, and outputs;

an N-bits blanking operator, said blanking operator having: N inputs connected to the data bus, N outputs and one blank command input connection;

a REFRESH RAM connected for storing data representing said alphanumeric characters, said REFRESH RAM having a capacity of at least one page of X by Y words of N bits and having N data inputs connected to the N outputs of said blanking operator, and an input means for addressing said character cells, a Read/Write command input and N outputs;

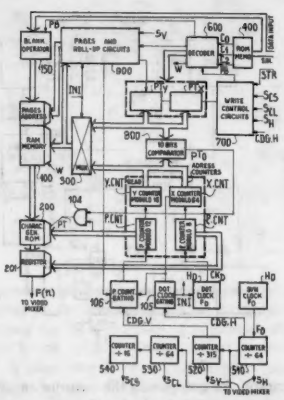
an N-bits latch register, said register having N inputs connected to said N outputs of said REFRESH RAM, N outputs and a load command input connection;

a character ROM for generating 2^N distinct characters, said character ROM having data inputs connected to said latch register, a scanning means for scanning said character cells; the character ROM also having outputs equal in number to or less than the value L;

a serializer register having inputs connected to said character ROM, a second load command input connection, a shift command input and an output connected to the TV set;

a package containing a semiconductor microchip comprising the following LSI circuits:

a timing generator which permits the synchronization of the TV set scanning means and of the other LSI circuits of said semiconductor microchip, this generator comprising: a clock signal source of fixed frequency which increments a first counter including a decoder which provides TV line SYNC top-signals and pulse signals for horizontal



centering of the page of displayed characters and a second counter including a decoder which provides TV frame SYNC top-signals and pulse signals for vertical centering of the page of displayed characters;

an address signal generator comprising: a command circuit which generates a command signal; a clock signals source which generates clock signals at a frequency equal to the time base of the dots, said clock signals source connected to the command circuit to be disabled by the command signal, the address signal generator also comprising four linked counters including decoders which are incremented by the clock signals source; these connectors being: one modulo-L counter, one modulo-X counter, one modulo-P counter, one modulo-Y counter, an output of said counter modulo-L also being connected to the shift command input of said serializer register, the output of said modulo-L counter being connected to the first load command input of said latch register and the second load command of said serializer register, the outputs of the modulo-P counter being connected to the character ROM inputs means for scanning said character cells; the command circuit of the dot clock circuit including: a first input which receives said signals for horizontal centering and a second input connected to the output of said modulo-X counter decoder, the incrementation of the modulo-P

counter being enabled by said pulse signals for vertical centering;

a writing address pointer with outputs connected to said REFRESH RAM, comprising an X-bits register linked through an inhibiting gate to a Y-bits register;

a first multiplexer comprising a first input connected to the outputs of said writing address pointer and a second input connected to outputs of the modulo-X and modulo-Y counters and also comprising (X+Y) outputs connected to the addressing means of said REFRESH RAM, and a command input connected to receive said command signal;

a decoding operator connected to said character ROM for decoding via a forcing operator means, said forcing operator means including a command input, said decoding operator being connected to generate command inputs to said writing address pointer;

a writing generator connected to operate in synchronism with the TV line SYNC top-signals, said writing generator connected to the Read/Write command input of said REFRESH RAM and connected to provide an input to the writing address pointer;

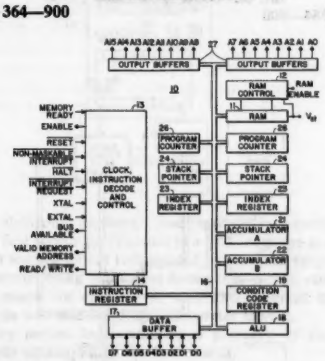
an erase generator for clearing an end of a row, a row, or a page of characters, said erase generator including inputs connected to said decoding operator, an output connected to the inhibiting gate of said writing address pointer, an output connected to the blank command input of said blanking operator and the command input of said forcing operators;

a writing cursor generator including: a comparator of (X+Y) bits with inputs connected respectively to the outputs of said writing pointer and the outputs of said modulo-X and modulo-Y counter; and an inhibiting gate connected to receive the output of the writing cursor generator and to receive the outputs of said modulo-P counter and to generate a signal indicative thereof to the writing cursor.

4,328,558
RAM ADDRESS ENABLE CIRCUIT FOR A MICROPROCESSOR HAVING AN ON-CHIP RAM

Fuad H. Musa, and Pern Shaw, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 9, 1978, Ser. No. 884,944
Int. Cl.[3] G06F 9/22
U.S. Cl. 364—900 **8 Claims**

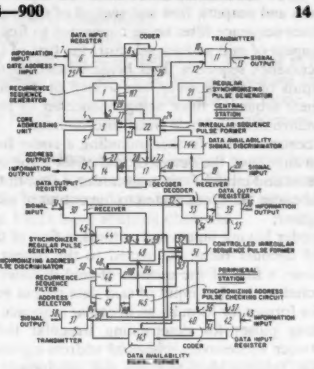


1. A pulse generating circuit for generating a pulse to temporarily inhibit an address decoder, the generating circuit being a portion of a microprocessor having said address decoder, the circuit having an input and an output, comprising: means for producing an electrical delay, the means being coupled to the input of the circuit and providing an output; a first logic gate having at least a first and a second input and an output, the first input of the first logic gate being coupled to the output of the means for producing said electrical delay, the second input to the first logic gate being coupled to the input of the circuit; and a second logic gate having at least a first and a second input, the first input of the second logic gate being coupled to the output of the first logic gate and the second input to the second logic gate being coupled to the input of the circuit to at said output of the generating circuit provide the pulse to temporarily inhibit the address decoder upon occurrence of the trailing edge of a microprocessor control pulse received at the input of the circuit.

4,328,559
APPARATUS FOR EXCHANGE OF DATA BETWEEN CENTRAL STATION AND PERIPHERAL STATIONS AND SYSTEM FOR EFFECTING SAME

Alexandr B. Markhasin, ulitsa Krylova, 41, kv. 22; Gennady V. Belyaev, ulitsa Nikitina, 68, kv. 20; Jury V. Babushkin, ulitsa Turgeneva, 223, kv. 21, and Alexandr K. Petrov, ulitsa Vystavochnaya, 11, kv. 51, all of Novosibirsk, U.S.S.R.

Filed Jun. 8, 1979, Ser. No. 46,640
Int. Cl.[3] G06F 3/00; H04J 3/00
U.S. Cl. 364—900 **14 Claims**



1. In a system for an exchange of data between a central station and peripheral stations, said central station including a recurrence sequence generator for producing an address signal consisting of a sequence having elements having a predetermined recurrence relation and including M non-recurrent subsequences designating the addresses of selected peripheral stations, said recurrence sequence generator having an input and outputs, a code addressing unit for comparing the current values of the recurrence sequence produced by said recurrence sequence generator with the address of a given peripheral station and enabling one of a reception of data to the peripheral station and transmission of data from the peripheral station if the accumulated subsequence coincides with said address of the peripheral station, said code addressing unit having a first input, a second input which is a data address input, a third input and outputs, one of the outputs being an address output of said central station and the first input being connected to one of the outputs of said recurrence sequence generator, a data input register having a first input, a second input and an output, the first input of said data input register being an information input of said central station, a transmitter having a first input, a second input and an output, the first input of said transmitter being electrically connected to the output of said data input register, the second input of said transmitter being connected to said recurrence sequence generator and the output of said transmitter being a signal output of said central station, a receiver having an input and an output, the input of said receiver being a signal input of said central station, a data output register having a first input, a second input and an output, the output of said data output register being an information output of said central station, the first input of said data output register being electrically connected to said receiver, a regular syn-

chronizing pulse generator for producing a regular set of clock frequencies, said regular synchronizing pulse generator having an output, and each of said peripheral stations of said system including a receiver having an input and outputs, the input of said receiver being a signal input of the peripheral station, a data output register having a first input, a second input and an output, the first input of said data output register being electrically connected to the first output of said receiver, the output of said data output register being an information output of the peripheral station, a transmitter having an input and an output, the output of said transmitter being a signal output of the peripheral station, a data input register having inputs and outputs, a first of the outputs of said data input register being electrically connected to the output of said transmitter, a first of the inputs of said data input register being an information input of said peripheral station, a synchronized regular pulse generator having an input and an output, the input of said synchronized regular pulse generator being connected to the output of said receiver, an address selector having inputs and an enable output, a synchronizing address pulse discriminator having inputs and an output, a recurrence sequence filter having inputs and outputs, first and second of the outputs of said recurrence sequence filter being connected to first and second of the inputs of said address selector, the first of the inputs of said recurrence sequence filter being connected to a third of the outputs of said receiver, the second of the inputs of said recurrence sequence filter being connected to the output of said synchronizing address pulse discriminator,

said central station further including a coder having inputs and an output, the output of said coder being connected to the second input of said transmitter, a first of the inputs of said coder being connected to the output of said data input register;

a decoder having inputs and outputs, a first of the inputs of said decoder being connected to the output of said receiver, a first of the outputs of said decoder being connected to the first input of said data output register; and

a pulse former for forming an irregular sequence of synchronizing pulses for determining irregular time intervals between successive elementary address signals dependent upon random data streams and producing a sequence corresponding to these time intervals, of successive synchronizing address pulses and synchronizing data pulses, said pulse former having inputs and outputs including a synchronizing address pulse output of an irregular sequence of synchronizing pulses, a synchronizing pulse output for data being transmitted of an irregular sequence of synchronizing pulses, a synchronizing pulse output for data being received of an irregular sequence of synchronizing pulses, a first of the inputs of said pulse former being connected to a second output of said code addressing unit, a second of the inputs of said pulse former being connected to the output of said regular synchronizing pulse generator, the synchronizing pulse output for data being transmitted of said pulse former being connected to the second inputs of said data input register and said coder, the synchronizing pulse output for data being received of said pulse former being connected to the second inputs of said data output register and said decoder and the synchronizing address pulse output of said pulse former being connected to the input of said recurrence sequence generator; and

each of said peripheral stations further including a decoder having inputs and an output, the output of said decoder being connected to the first input of said data output register, a first of the inputs of said decoder being connected to the output of said receiver;

a coder having inputs and an output, the output of said coder being connected to the input of said transmitter, a first of the inputs of said coder being connected to the output of said data input register; and

a controlled pulse former for forming an irregular sequence of synchronizing pulses, said controlled pulse former having inputs and outputs including a synchronizing pulse output for data being received and a synchronizing pulse output for data being transmitted of an irregular sequence of synchronizing pulses, a first of the inputs of said controlled pulse former being connected to the output of said synchronized regular pulse generator, a second of the inputs of said controlled pulse former being connected to the enable output of said address selector, the synchronizing pulse output of said controlled pulse former for data being received being connected to the second inputs of said data output register and said decoder and the synchronizing pulse output of said controlled pulse former for data being transmitted being connected to the second inputs of said data input register and said coder, the first and second inputs of said synchronizing address pulse discriminator being connected to said receiver and said synchronized regular pulse generator.

4,328,560

Patent Not Issued For This Number

4,328,561

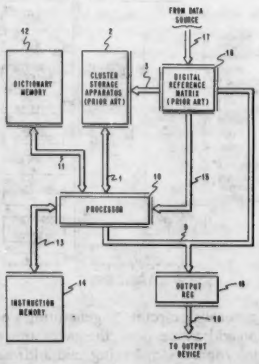
ALPHA CONTENT MATCH PRESCAN METHOD FOR AUTOMATIC SPELLING ERROR CORRECTION

Danny B. Convis, Washington Grove; David Glickman, Frederick, and Walter S. Rosenbaum, Bethesda, all of Md., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,000

Int. Cl.[3] **G06K** *9/00*; **G06F** *11/00*

U.S. Cl. 364—900 **2 Claims**



1. In a process for automatically detecting and correcting misspelled text words, a method for improving the selection

from a dictionary memory of the set of correctly spelled target words most nearly equal to the input word without recourse to a character by character positional match comprising the steps of:

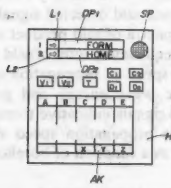
(a) defining a set of counters for each text character;
(b) incrementing said counters to accumulate a count of the respective characters in the input word;
(c) decrementing said counters for each character in a target word;
(d) calculating an absolute value for the remainders in the set of counters;
(e) calculating a threshold value using the combination of the number of characters in the input word and the target word;
(f) calculating a match value for the target word using the common characters between the input word and the target word; and
(g) selecting each target word whose match value exceeds the calculated threshold.

4,328,562

MEANS FOR DISPLAYING AT LEAST TWO DIFFERENT WORDS AND FOR PROVIDING INDEPENDENT PRONUNCIATIONS OF THESE WORDS

Shintaro Hashimoto, Ikoma, and Akira Tanimoto, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 18, 1980, Ser. No. 113,296
Claims priority, application Japan, Jan. 20, 1979, 54-5717
Int. Cl.³ G06F *3/14, 3/16*
U.S. Cl. 364—900 12 Claims



1. An electronic dictionary and language interpreter device wherein first words represented in a first language are entered to obtain second words represented in a second language, the second words being equivalent to the first words, comprising:

input means for entering at least two different input first words into said language interpreter device;

memory means for containing a plurality of the second words equivalent to the first words;

access means connected between the input means and the memory means and responsive to entry of the first words via said input means for addressing the memory means to retrieve the second words therefrom, the second words being equivalent to the two first words; and

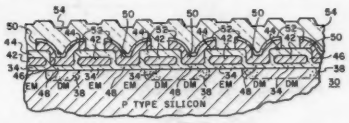
voice synthesizer means connected to the access means and resposive to the first words entered via said input means for selectively providing an audible pronunciation of either the first one of the input first words or the second one of the input first words.

4,328,563

HIGH DENSITY READ ONLY MEMORY

Paul R. Schroeder, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Continuation of Ser. No. 2,833, Jan. 12, 1979, abandoned, which is a continuation of Ser. No. 894,701, Apr. 10, 1978, abandoned. This application Apr. 2, 1980, Ser. No. 136,588
Int. Cl.³ G11C *17/00*
U.S. Cl. 365—104 9 Claims



1. A ROM matrix comprising:

a semiconductor substrate,

a plurality of columns of seriesed FETs disposed in parallel in the substrate, certain FETs having implanted channels causing them to operate in the depletion mode, the remaining FETs being operable in the enhancement mode, and

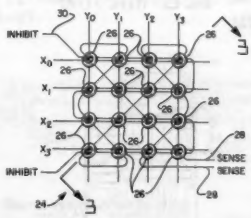
a plurality of conductive layers disposed in rows transverse to the columns for accessing each FET to determine its mode, the conductive layers being closely packed so that adjacent FETs have abutting channels.

4,328,564

THERMALLY SECURE POSTAGE METER SYSTEM

Roger W. Pryor, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

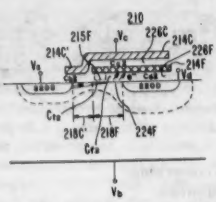
Filed Nov. 26, 1979, Ser. No. 97,476
Int. Cl.³ G11C *11/06*
U.S. Cl. 365—130 20 Claims



1. In a postage meter having printing means for dispensing postage values and processing means for maintaining an accounting of postage dispensed, the improvement comprising a system for securing postage meter accounting data in the presence of elevated temperatures encountered during a fire, the system comprising a magnetic core memory, the memory including a plurality of magnetic toroids, means for accessing each of the toroids, the accessing means including means for generating a magnetomotive force for magnetizing a selected toroid in one direction and means for sensing the direction of magnetization of the selected toroid, each of the toroids being

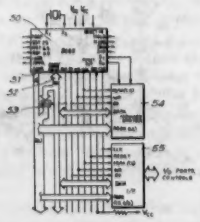
constructed of a magnetic material having a Curie temperature of at least 650 degrees Celsius for preserving the accounting data stored in the memory during a fire.

4,328,565
NON-VOLATILE EPROM WITH INCREASED EFFICIENCY
Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022
Filed Apr. 7, 1980, Ser. No. 137,764
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 **11 Claims**



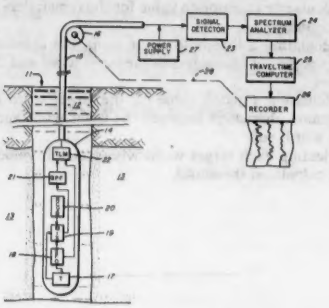
1. A reprogrammable nonvolatile EPROM cell comprising:
a semiconductor substrate containing a source region and a drain region;
a floating gate positioned such that a substantial portion of the floating gate is above but insulated from the drain region and the remainder of the floating gate extends over but is insulated from a portion of the channel region between the drain and the source;
a control gate insulated from but extending over both the floating gate and the remainder of the channel region between the source and the drain such that that portion of the control gate not over the floating gate is positioned more closely to that portion of the channel region between the source and the drain not covered by the floating gate than is the portion of the control gate overlying the floating gate.

4,328,566
DYNAMIC MEMORY REFRESH SYSTEM WITH ADDITIONAL REFRESH CYCLES
Michael Thaler, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Jun. 24, 1980, Ser. No. 162,360
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—222 **7 Claims**



3. A dynamic memory refresh system for a data processing system including a dynamic memory and a data processor producing first signals indicating a fetch cycle during which the dynamic memory is addressed, a read signal, and a write signal, comprising means responsive to said first signals for initiating refresh cycles in said memory during said read signal and write signal, and further means responsive to said first signals and read signal for initiating a further refresh cycle during the system clock cycle following the respective read signal.

4,328,567
METHODS AND APPARATUS FOR ACOUSTIC LOGGING IN EARTH FORMATIONS
Carl Dodge, Alief, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Nov. 15, 1979, Ser. No. 94,415
Int. Cl.³ G01V *1/40, 1/30*
U.S. Cl. 367—32 **12 Claims**

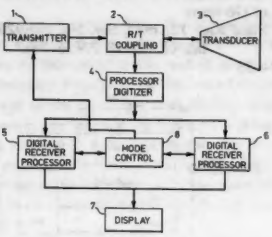


1. A method for measuring the speed of multiple acoustic energy wave propagation modes in earth formations in the vicinity of a well borehole, comprising the steps of:
generating, in a well borehole, discrete burst acoustic energy signals having a plurality of wave propagation modes, said signals having a consistently linearly changing frequency as a function of time and a synchronization associated therewith;
detecting, at a longitudinally spaced distance from the location of generation in a well borehole, acoustic energy wave modes propagated in the borehole and earth formations in the vicinity of the borehole, and generating signals representative thereof;
generating product signals as a function of time representative of the products of said linearly changing frequency generated signals and said detected signals;
forming frequency spectra of said product signals;
deriving from said frequency spectra of said product signals, indications of the speed of propagation of a plurality of modes of acoustic wave energy and generating mode propagation speed signals indicative thereof; and
recording said mode propagation speed signals and said frequency spectra as a function of borehole depth.

4,328,568
DUAL MODE SONAR SYSTEM
Herbert H. Webb, Burlington, Canada, assignor to Westinghouse Canada Inc., Hamilton, Canada
Filed Oct. 14, 1980, Ser. No. 196,305
Claims priority, application Canada, Feb. 4, 1980, 345008
Int. Cl.³ G01S *15/02*
U.S. Cl. 367—101 **2 Claims**

1. A sonar system including a transmitter capable of transmitting first pulses of one character and second pulses of a second character, first and second receivers capable of receiving and processing echoes resulting from either of said first and second pulses, said transmitter normally arranged to transmit in a single operating cycle first and second pulses of said first and second characteristic immediately sequential in time, said first receiver being arranged to receive and process echoes resulting from said first pulse and said second receiver being arranged to receive and process echoes resulting from said second pulse wherein, upon failure of said first receiver, means

controlling the character of said first and second pulses permits transmission of pulses of only said first character and means to



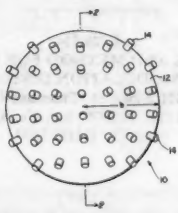
control said second receiver to enable said second receiver to receive and process only echoes resulting from said first pulse.

4,328,569

ARRAY SHADING FOR A BROADBAND CONSTANT DIRECTIVITY TRANSDUCER

W. James Trott, Annandale, Va., and Jacek Jarzynski, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 14, 1979, Ser. No. 94,269
Int. Cl.³ H04B *13/00*
U.S. Cl. 367—103 **7 Claims**



1. A transducer for transmitting and receiving acoustical energy in a surrounding fluid medium, and having an essentially constant beam pattern for all operating frequencies above a cutoff frequency, comprising:

a spherical shell having an axis of symmetry, said shell having a circumferential arc b subtending a half-angle α, said half-angle α being measured from the axis of symmetry of said shell, said shell including an array of isophase, omnidirectional electro-acoustic elements, each element being amplitude-shaded in accordance with

$$S_n(\theta) = \frac{n}{2(2n+1)}\cos^n\theta + \frac{1}{2}\cos^{n+1}\theta + \frac{n+1}{2(2n+1)}\cos^{n+2}\theta,$$

where

n is a positive integer, and

θ is the angle

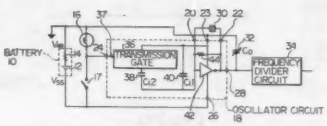
measured from the axis of said shell to the center of the shaded element.

4,328,570

ELECTRONIC TIMEPIECE WITH ILLUMINATION LAMP BATTERY VOLTAGE DROP COMPENSATION CIRCUIT

Hisahide Nakagawa, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,719
Claims priority, application Japan, Apr. 24, 1979, 54-49703
Int. Cl.³ G04B *19/30, 23/02;* G04F *5/00;* H03B *5/30*
U.S. Cl. 368—67 **12 Claims**



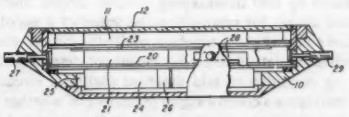
1. In an electronic timepiece powered by a battery and including a load device which places a relatively heavy load on said battery when activated, and activation means for activating said load device, said electronic timepiece further including a crystal-controlled oscillator circuit comprising an inverter having an input electrode and an output electrode, a crystal vibrator connected between said input and output electrodes, input capacitor means coupled between said input terminal and a ground reference potential for thereby determining a value of input capacitance of said crystal-controlled oscillator circuit, and output capacitance means coupled between said output electrode and said ground reference potential for thereby determining a value of output capacitance of said crystal-controlled oscillator circuit, the improvement whereby said input capacitor means comprises a first capacitor and a second capacitor, and further comprising selection means comprising electronic switching means connected in series with said second capacitor such that said value of input capacitance is equal to the sum of the capacitances of said first and second capacitors when said load device is not activated and is equal to the capacitance of said first capacitor when said load device is activated.

4,328,571

RAPID START OSCILLATOR LATCH

Robert T. Noble, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 7, 1979, Ser. No. 73,153
Int. Cl.³ G04C *19/00;* G04F *5/00;* G04B *2/00*
U.S. Cl. 368—87 **6 Claims**



1. An oscillator system comprising:

an oscillator means for generating repetitive oscillator signals having a resonance means and a selectable gain integrated injection logic amplifier operatively connected therewith, the gain of said selectable gain amplifier being directly proportional to an injection current;

a latch circuit having a set state and a reset state;

a power source for said oscillator system;

a power up clear means responsive to the connection of said power source to said oscillator system for setting said latch circuit;

a counting means responsive to said oscillator signals for resetting said latch circuit upon receipt of a predetermined number of said oscillator signals; and

a current regulator means responsive to said state of said

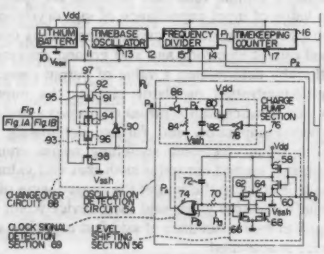
latch circuit for causing said injection current of said selectable gain amplifier to have a high value when said latch circuit is in said set state and a low value when said latch circuit is in said reset state, whereby said selectable gain amplifier has a high gain when said latch circuit is in said set state and a low gain when said latch circuit is in said reset state.

4,328,572

VOLTAGE CONTROL SYSTEM FOR ELECTRONIC TIMEPIECE

Hisashi Kawahara, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,379
Claims priority, application Japan, Aug. 14, 1979, 54-103347; Aug. 14, 1979, 54-103348
Int. Cl.³ G04G 3/00
U.S. Cl. 368—204 10 Claims



1. In an electronic timepiece powered by a lithium battery and having a timebase oscillator circuit for providing a standard frequency timebase signal, a frequency divider circuit for dividing the frequency of said timebase signal to provide a unit time signal and to provide at least one clock pulse signal comprising a pulse train of higher frequency than said unit time signal, a timekeeping counter circuit for counting said unit time signal, time display means for displaying time information produced by said timekeeping counter circuit, and a voltage control circuit for controlling the value of a supply voltage applied to power said timebase oscillator circuit, comprising:

oscillation detection circuit means for detecting the operating condition of said timebase oscillator circuit, and for providing a control signal indicative of whether said timebase oscillator circuit is in an oscillating or in a non-oscillating state;

voltage step-down circuit means producing a stepped-down voltage having a value lower than the output voltage of said lithium battery; and

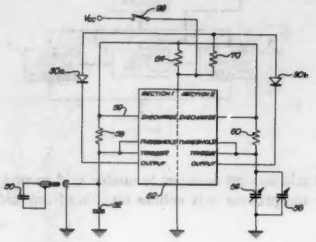
changeover circuit means responsive to said control signal for applying said stepped-down voltage to a supply voltage terminal of said timebase oscillator circuit for powering said timebase oscillator circuit when said control signal is in a first state which indicates that said timebase oscillator is in an oscillating condition, and for applying said output voltage of said lithium battery to said supply voltage terminal to power said timebase oscillator circuit when said control signal is in a second state which indicates that said timebase oscillator is in a non-oscillating condition.

4,328,573

PRECISION PHONOCARTRIDGE INTERFACE

Stephen Kurtin, Sherman Oaks, and Edward Kelm, Pasadena, both of Calif., assignors to NAD International, Grafelfing, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,926
Int. Cl.³ G11B 27/36
U.S. Cl. 369—53 13 Claims



1. An interface device for connection between a magnetic phonograph cartridge carried in a tonearm and a phonograph preamplifier, comprising:

a capacitance test section for determining the capacitance of a tonearm cable of the tonearm;

a termination network for connection to a tonearm cable, said termination network including variable capacitance means, whereby correct termination capacitance for the phonograph cartridge is achieved by proper adjustment of the capacitance means after determination of the tonearm cable capacitance; and

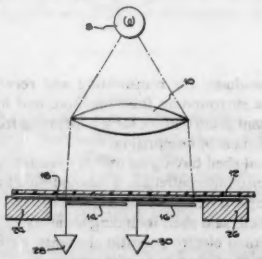
an isolation amplifier connected to the termination network, said isolation amplifier for preventing the input impedance of a phonograph preamplifier from affecting the termination impedance of the phonograph cartridge, the output of the isolation amplifier being the output of said interface device.

4,328,574

APPARATUS AND METHOD FOR DETECTING CROSSMODULATION DISTORTION

Terry D. Beard, 2471 Sapra St., Thousand Oaks, Calif. 91360

Filed Oct. 9, 1979, Ser. No. 82,662
Int. Cl.³ G11B 7/00
U.S. Cl. 369—54 34 Claims



1. Apparatus for detecting cross modulation distortion on a film bearing an optical sound track having a high frequency test signal modulated by a low frequency test signal, comprising:

a light source,

a first light detection means positioned to receive light transmitted from the source,

means for positioning the film with its sound track in the

light path between the light source and first light detection means, said positioning means enabling relative movement between the film and the light path along the sound track,

light control means controlling the transmission of light along said light path through at least one first predetermined area on the sound track, said at least one first area being defined by a position on the sound track and sufficiently large dimensions such that, during relative movement between the film and the light path along the sound track, the amount of light received by the first detection means is substantially independent of the high frequency test signal and varies substantially only in accordance with the amount of crossmodulation distortion on the sound track, and

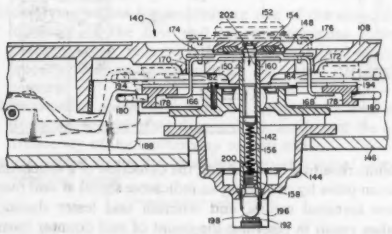
first output means for detecting variations in the amount of light transmitted through the sound track to the first detection means during such relative movement between the film and the light path, thereby providing an indication of the crossmodulation distortion on the sound track which is substantially independent of the speed of relative movement between the film and the light path.

4,328,575

DISC PLAYER HAVING TURNTABLE HEIGHT VARYING APPARATUS

Charles A. Elliott, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 9, 1980, Ser. No. 148,467
Int. Cl.³ G11B *3/60*
U.S. Cl. 369—269 **2 Claims**



1. In a player for recovering prerecorded information from a disc record by means of a pickup; said player including a turntable disposed thereon for centering and rotatably supporting a record for playback; said player further having a carriage for supporting said pickup; said carriage being mounted in said player at a given height for translation over and across a turntable-supported record; apparatus secured to said turntable for varying the height of said turntable with respect to the base of said player over an operating range comprising:

(A) a tubular shaft having one end secured to said turntable such that said shaft is coaxially disposed with respect to said turntable;

(B) a member disposed within said tubular shaft near the free end thereof, and subject to motion along a path disposed parallel to the axis of said turntable; said member having a portion protruding beyond said free end for engagement with said base of said player; and

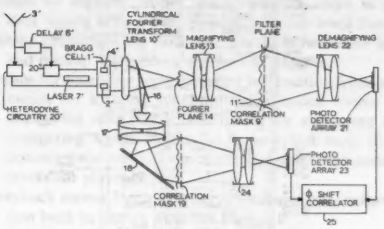
(C) means arranged within said tubular shaft on the side of said member away from said protruding portion thereof for varying the position of said member along said path; said turntable having a central opening in communication with the interior of said tubular shaft for providing access to said position varying means.

4,328,576

WIDE BAND DEMODULATOR OF PHASE MODULATED SIGNALS

William S. Oakley, Fremont, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 10, 1980, Ser. No. 129,156
Int. Cl.³ G01R *23/17*; G02F *1/39*; H03D *3/06*; H04J *1/16*
U.S. Cl. 370—3 **9 Claims**



7. A wide band demodulator for phase modulated signals comprising:

a. Bragg cell means;

b. light generating means for illuminating said Bragg cell means with coherent light;

c. first and second photodetector means;

d. means for generating a first sonic wave in a first portion of said Bragg cell means and for generating a second sonic wave in a second portion of said Bragg cell means which is delayed with respect to the said first sonic wave for generating a frequency dependent phase difference between said first and second sonic waves;

e. first correlation means optically coupled to said first photodetector means;

f. second correlation means optically coupled to said second photodetector means;

g. means for producing linear diffraction patterns in the filter planes of said first and second optical correlation means which are a function of the Fourier transform of the light emerging from said Bragg cell means; and

h. said second correlation means being in a phase shifted relationship with respect to said linear diffraction pattern.

4,328,577

MULDEM AUTOMATICALLY ADJUSTING TO SYSTEM EXPANSION AND CONTRACTION

Ned E. Abbott, McKinney; Hampapur R. Keshavan, Dallas, and Robert J. McGuire, Richardson, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 3, 1980, Ser. No. 156,151
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—84 **30 Claims**

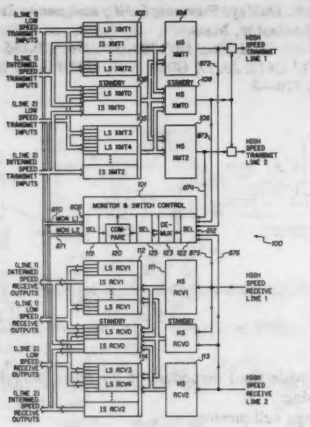
1. A multiplexer comprising in combination:

a plurality of parallel data input groups;

transmission means multiplexing said data input groups for serial transmission of high speed data;

means automatically adjusting to expansion and contraction

of input data while said multiplexer is in operation by enabling addition or removal of data input groups up to



the capability of said transmission means without disturbing or interrupting data traffic through said multiplexer.

4,328,578

DIGITAL RECEIVER/TRANSCEIVER SYNCHRONIZATION PULSE DETECTOR FOR A MULTIPLEXING SYSTEM

Robert R. Bell, Libertyville, N.Y., and Scott T. Christians, Seguin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 31, 1979, Ser. No. 108,425
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—100 **5 Claims**

1. A receiver including a synchronization system in which the operation of local and remote switching circuits are synchronized by a received clock signal, said receiver and synchronization system including:

receiver means located in a main receiver chassis for receiving information transmitted on at least a predetermined channel and providing corresponding indicative signals in response thereto;

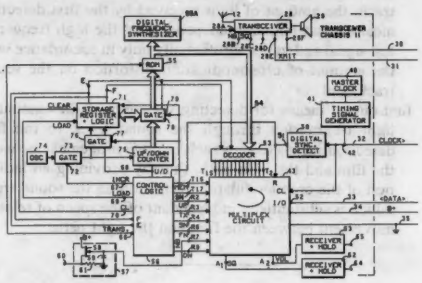
local and remote receiver switching circuits, said local switching circuit located in said main receiver chassis and said remote switching circuit located on a receiver remote control unit effectively electrically coupled to said main chassis, each of said switching circuits commencing a predetermined sequence of switching operations in accordance with the occurrence of received short duration clock pulses contained in a received clock signal once a periodic relatively long duration synchronization pulse, having a first duration, in the clock signal is detected as occurring, said short duration pulses having lesser durations than said first duration;

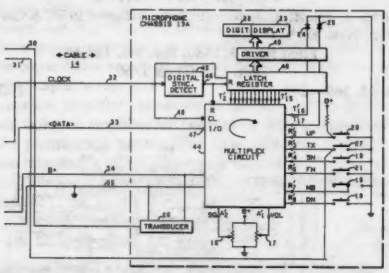
at least one of said local and remote switching circuits including a digital synchronization pulse detector for detecting said periodic synchronization pulses contained in said clock signal, said digital synchronization pulse detector comprising;

terminal means for receiving said clock signal which has said periodic synchronization pulses of said first duration and said short duration pulses;

oscillator means for producing a fixed frequency signal having a predetermined periodic repetition rate insuring the occurrence of a substantial number of cycles of said fixed frequency signal during said first duration of the synchronization pulses of the clock signal;

counter means for receiving, during said clock signal pulses, said fixed frequency signal and developing a count related to the number of cycles of said fixed frequency signal received, said counter means having a maximum capacity of N counts and including an overflow terminal means at which an indicative signal is produced when the N count capacity of said counter means is exceeded, said counter means also having a reset terminal means for reinitializing the count of said counter means in response to received pulses, said terminal means coupled to said reset terminal means wherein for said synchronization pulses of said first duration the count in said counter means will exceed N





counts resulting in indicating the detection of a synchronization pulse by providing an indicative signal at said overflow terminal means, and wherein said lesser duration pulses result in resetting the count of said counter means before said counter means can attain a count of N counts, said indicative signal at said overflow terminal means coupled to one of said local and remote switching circuits to insure proper synchronous operation of said local and remote switching circuits.

4,328,579

VOICE BAND MULTIPLEX TRANSMISSION SYSTEM

Shinichiro Hashimoto, Koganei, and Hiromi Nagabushi, Hino, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,916
Claims priority, application Japan, Jun. 8, 1979, 54-71930
Int. Cl.³ H04J *1/08*
U.S. Cl. 370—111 **23 Claims**

1. A voice band multiplex transmission system comprising:

frequency generating means for generating first and second signals having first and second frequencies respectively;

modulating means connected to said frequency generating means for frequency modulating said first and second signals by the same input information while maintaining the frequency ratio between the said first and second frequencies, the first and second frequencies respectively belonging to predetermined first and second frequency

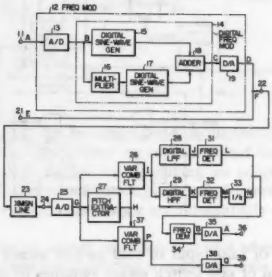
bands and bearing no harmonic relation to each other in the band of a voice circuit;

means for superimposing the modulated first and second signals and an input voice signal on one another and sending them out on a transmission line;

receiver means coupled to said transmission line and comprising pitch extracting means for extracting a pitch frequency of said input voice signal from the signal received from the transmission line;

first comb-characteristic filter means supplied with said received signal to reject the extracted pitch frequency and frequencies of its integral multiples;

first and second filter means respectively supplied with the output from the first comb-characteristic filter means and having the first and second frequency bands as their pass bands;



first and second frequency detecting means, each supplied with the output from one of the first and second filter means to detect one frequency larger than a predetermined threshold;

multiplying means for multiplying one of the detected frequencies of the first and second frequency detecting means by said frequency ratio or a reciprocal of the frequency ratio to coincide with the other detected frequency;

demodulating means for producing a signal of a level corresponding to said other detected frequency and the output frequency of the multiplying means; and

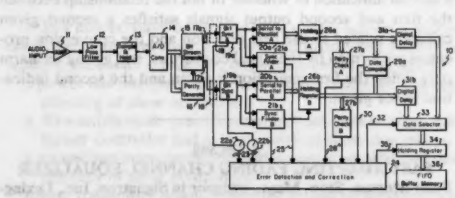
voice output means for obtaining the voice signal from said received signal.

4,328,580

APPARATUS AND AN IMPROVED METHOD FOR PROCESSING OF DIGITAL INFORMATION

Thomas G. Stockham, Jr., and Bruce C. Rothaar, both of Salt Lake City, Utah, assignors to Soundstream, Inc., Salt Lake City, Utah

Filed Jul. 6, 1979, Ser. No. 55,689
Int. Cl.[3] G06F *11/20*
U.S. Cl. 371—8 **15 Claims**



1. Apparatus for processing of digital information comprising a multi-channel recorder wherein analog information is converted to digital form and recorded on a permanent media on a plurality of sets of main and backup tracks, each said backup track containing a duplication of the main track information that consists of data words that each contain synchronization codes, said recorder including circuitry for picking up information off said permanent media for playback;

Said multi-channel recorder including:

means for retrieving each said main and backup track flows;

means for measuring and comparing the signal quality of each data word in each main and backup track flows;

means for locating proper synchronization codes in said data words in each said main and backup track flows;

means for comparing said data words in each said main and backup track flows against one another;

means for receiving and evaluating information from: said means for locating synchronization codes; means for comparing data words; and means for measuring and comparing signal quality, so as to select most likely correct data words from each said main and backup tracks for playback; and

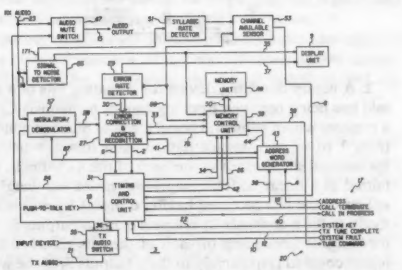
playback means for converting selecting digital information back to analog form for playback.

4,328,581

ADAPTIVE HF COMMUNICATION SYSTEM

James V. Harmon, and Roger A. Kyllo, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 20, 1980, Ser. No. 161,523
Int. Cl.[3] H04B *7/02*
U.S. Cl. 371—8 **12 Claims**



1. A high frequency (HF) communication system with at least two stations and wherein each station has a discrete address, a transmitter, a receiver, a radio control unit for controlling the operation of the transmitter, the receiver and to receive a discrete address of a station that is to be called and an adaptive communication processor means for selecting the preferred frequency for transmitting at least a preselected message format between the stations and wherein the adaptive communication processor means, comprises:

PTTK means for placing the station in a transmit mode;

timing and control means for sequentially tuning the receiver through a group of N channels when the station is not in the transmit mode and where N is the number of alternate communication channels with each channel having a preselected frequency and bandwidth, the timing and control means causes the receiver at each channel to listen for the discrete address for a preselected period of time;

link quality means for measuring a link quality of each channel that the receiver is tuned to including, signal-to-noise detector means for obtaining a signal-to-noise factor-error rate detector means for obtaining a bit error factor for each channel-and combining means for combining the signal-to-noise factor and the bit error factor to obtain the link quality of each channel that the receiver is tuned to;

address detection means for detecting the discrete address of

the station that transmitted a message on the channel to which the receiver is tuned;

storage means for storing the link quality of each channel by detected discrete address; and

channel selector means for selecting the channel with the best link quality for the discrete address when the station is placed in the transmit mode.

4,328,582

BINARY DECODING DEVICE

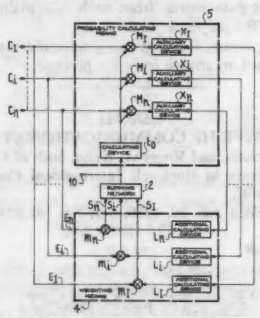
Gerard Battail, and Patrick Mollat du Jourdin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 30, 1980, Ser. No. 154,954

Claims priority, application France, May 31, 1979, 79 13987

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—37 **4 Claims**



1. A binary decoding device for decoding bits of a message, said bits being received from a group of n channels C_i (n being a positive whole number, i being a whole number which varies from 1 to n, each binary data of said message being either transmitted simultaneously on each of the n channels, or transmitted in a linear code), comprising means for weighting the values of the bits received having n inputs E_i coupled respectively to the n channels C_i, n inputs e_i and n outputs S_i; a device for weighted decoding of each of the bits received having n inputs coupled respectively to the n outputs S_i of the weighting means and m outputs r_j (m being a positive whole number, j being a whole number which varies from 1 to m) for delivering respectively m relative quantities A_{jt} at the instant t, the sign and the modulus of each quantity A_{jt} being such as to represent respectively a binary value which has been transmitted with the highest probability and the coefficient of logarithmic likelihood of said value; means for calculating the probability of error in the case of each of the channels C_i by comparing each of the bits received with the result of its decoding, said calculating means being provided with n inputs coupled respectively to the n channels C_i, m additional inputs coupled respectively to the m outputs r_j of the weighted decoding device, and n outputs V_i coupled respectively to the n inputs e_i of the weighting means, said n outputs being intended to deliver the probability error p_i of each channel.

4,328,583

DATA BUS FAULT DETECTOR

Kevin C. Stodola, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 8, 1980, Ser. No. 135,118

Int. Cl.³ G06F *11/00*

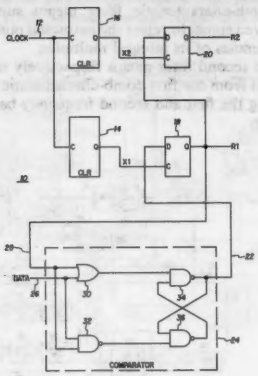
U.S. Cl. 371—57 **19 Claims**

1. An error detector circuit for detecting a prolonged sequence of identical state bits on a data bus without intervening bits of opposite state, comprising:

timing means outputting periodic signals defining cycles;

switch means clocked by said signal for gating an input of said switch means to an output of said switch means; and

comparator means comparing the logic state of data on said bus to the logic state of said output of said switch means during a cycle and, in response to a given logic state of data on said bus relative to the logic state of said output of said switch means during the cycle, changing the logic



state of said input of said switch means such that said output of said switch means switches to opposite state at the next successive said signal whereby said switch means has alternate opposite logic states for successive cycles as long as data on said bus exists for a time at said given logic state relative to the logic state of said output of said switch means during each cycle.

4,328,584

METHOD AND ARRANGEMENT FOR SUPERVISING SIGNAL AMPLITUDE CONVERTERS

Kurt A. Samuelsson, Tyresö, and Walter H. E. Widl, Bandhagen, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 12, 1980, Ser. No. 129,636

Claims priority, application Sweden, Mar. 30, 1979, 7902834

Int. Cl.³ G06F *11/00*

U.S. Cl. 371—68 **9 Claims**

1. In a system wherein signals are processed by a signal converters, the method of supervising the operation of at least two signal converters, one of said signal converters converting a first input-signal to a first output-signal, the other of said signal converters converting a second input-signal to a second output-signal, said method comprising the steps of giving a first indication of whether or not the relationship between the first and second input-signals satisfies a first given criterion, giving a second indication of whether or not the relationship between the first and second output signals satisfies a second given criterion related to the first criterion and the conversion processes performed by the signal converters, and giving an alarm only when the first indication is given and the second indication is not given.

4,328,585

FAST ADAPTING FADING CHANNEL EQUALIZER

Peter Monsen, Stow, Mass., assignor to Signatron, Inc., Lexington, Mass.

Filed Apr. 2, 1980, Ser. No. 136,543

Int. Cl.³ H04B *7/08*; H03K *5/159*

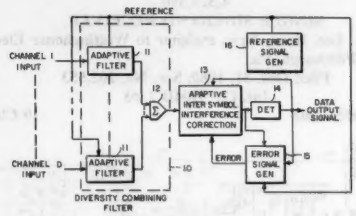
U.S. Cl. 375—14 **11 Claims**

1. A receiver system for processing signals received in a plurality of diversity channels, said receiver system comprising

adaptive matched filter means responsive to said received signals for providing a diversity combined received signal;

means responsive to said diversity combined received signal for adaptively correcting for intersymbol interference in said received diversity signal, said adaptively correcting means including

adaptive lattice filter means responsive to said diversity combined received signal for providing a plurality of



error residual signals which form an uncorrelated set of signals, said lattice filter means using said uncorrelated error residual signals for producing an adaptively corrected signal in which future intersymbol interference and past intersymbol interference are substantially eliminated; and

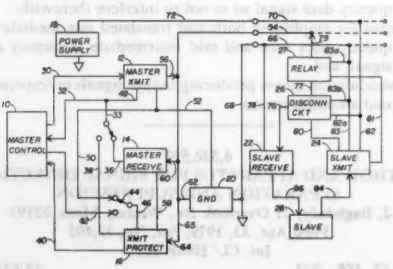
decision detector means responsive to said adaptively correcting means for producing a quantized data output signal.

4,328,586

OPTICALLY COUPLED SERIAL COMMUNICATION BUS

Paul L. Hansen, Brea, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 28, 1979, Ser. No. 98,100
Int. Cl.³ H04L *25/00*
U.S. Cl. 375—36 **25 Claims**



1. In a master/slave communication system having a master controller with a receiver, a plurality of distributed slave controllers, each with a receiver, the improvement comprising:

a power bus interconnecting said master controller and said plurality of slave controllers;

a forward/reverse transmission bus interconnecting said master controller and said plurality of slave controllers;

a ground bus interconnecting said master controller and said plurality of slave controllers;

master transmitter means connected to said forward/reverse bus for transmitting digital data to a slave controller in accordance with the presence and absence of a first signal level in the circuit including the ground bus and the forward/reverse transmission bus; and

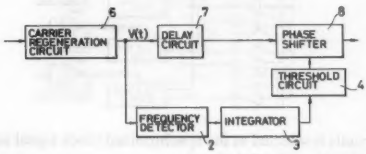
slave transmitter means connected to said forward/reverse bus for transmitting digital data to the master controller in accordance with the presence and absence of a second signal level in the circuit including the power bus and the forward/reverse transmission bus.

4,328,587

PHASE SLIP DETECTOR AND SYSTEMS EMPLOYING THE DETECTOR

Toshio Mizuno, Tanashi, and Takuro Muratani, Yokohama, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1980, Ser. No. 115,534
Claims priority, application Japan, Feb. 19, 1979, 54-17290; Feb. 19, 1979, 54-17291
Int. Cl.³ H03L *7/02*
U.S. Cl. 375—97 **3 Claims**



1. A carrier recovery circuit comprising:

a carrier regeneration circuit for extracting the regenerated carrier component from a digital PSK wave,

a frequency detector for detecting the instantaneous value of the output frequency of said carrier regeneration circuit,

an integrator for integrating the output signal of said frequency detector,

a threshold circuit coupled to said integrator,

a phase shifter having an input coupled via delay means to the output of said carrier regeneration circuit whereby said phase shifter receives a delayed output of said carrier regeneration circuit, and

means for coupling the output of said threshold circuit to a control terminal of said phase shifter, said phase shifter being operative to shift by a predetermined discrete amount the phase of the input regenerated carrier component in response to the polarity of the integrator output which exceeds a predetermined threshold level set by said threshold circuit.

4,328,588

SYNCHRONIZATION SYSTEM FOR DIGITAL DATA

Richard A. Smithson, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 17, 1980, Ser. No. 169,583
Int. Cl.³ H04L *7/08*
U.S. Cl. 375—106 **17 Claims**

1. A digital signal synchronization system comprising:

a signal source for supplying an input signal;

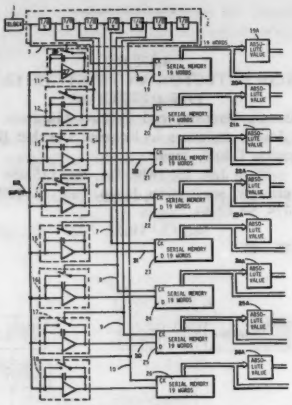
an analog to digital converter having an input connected to said signal source; and an output;

a plurality of substantially identical summing circuits each connected to said output of said analog to digital converter for summing a plurality of successive signals for a predetermined time;

a plurality of clock sources each connected to a corresponding one of said summing circuits so that each summing circuit begins summing said digital signal beginning at a different time; and

decision means connected to the output of each of said summing circuits for selecting one of said summing cir-

cuits according to a predetermined criteria, so that said clock signal associated with said one of said summing



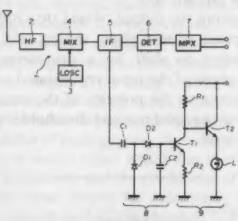
circuits is selected as the synchronized clock signal associated with said input signal.

4,328,589

SYSTEM FOR INDICATING MULTIPATH INTERFERENCE IN RADIO RECEIVER

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Continuation-in-part of Ser. No. 860,416, Dec. 13, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,524
Claims priority, application Japan, Dec. 17, 1976, 51-151559; Dec. 17, 1976, 51-151560
Int. Cl.³ H04B *17/00;* H03J *1/04*
U.S. Cl. 455—159 **11 Claims**



1. A system for simultaneously indicating the degree of multipath interference and signal strength of a received signal in a radio receiver comprising:

detector means connected to an intermediate frequency signal path in said receiver to extract therefrom a detected signal having a DC component with an amplitude depending on the strength of the intermediate frequency signal and an AC component depending on the degree of multipath interference;

a light emitting section connected to be controlled in its brightness in dependence upon a control signal applied thereto; and

control means coupled to said detector means for producing said control signal in dependence upon said detected signal, whereby the average brightness and flicker intensity of said light emitting section are controlled in accordance with said DC component and said AC component in said detected signal, respectively;

said light emitting section also being employed in said receiver for indicating information concerning a function of said receiver other than said signal strength and multipath interference degree; and

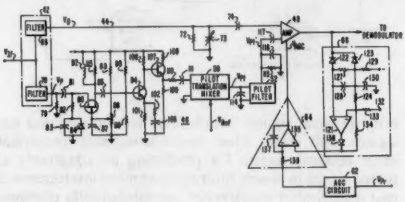
wherein said control means comprises means for inverting said detected signal for application to said light emitting section, whereby the portion of said light emitted by said light emitting section is inversely dependent upon the signal strength of said received signal.

4,328,590

SINGLE SIDEBAND RECEIVER

Ronald L. Lee, Reno, Nev., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 31, 1980, Ser. No. 202,553
Int. Cl.³ H04B *1/68*
U.S. Cl. 455—203 **19 Claims**



1. A single sideband receiver for the reception of signals composed of a data signal occupying a frequency spectrum and a pilot tone having a frequency adjacent to the frequency spectrum of the data signal, comprising:

means for receiving the data signal and the pilot tone, said means translating the frequency spectrum of said data signal and the frequency of said pilot tone to predetermined intermediate frequencies;

filter means separating said intermediate frequency data signal and said intermediate frequency pilot tone;

means for translating the frequency of said intermediate frequency pilot tone to a frequency sufficiently removed from the frequency spectrum of said intermediate frequency data signal so as not to interfere therewith;

means for amplifying both said translated intermediate frequency pilot tone and said intermediate frequency data signal; and

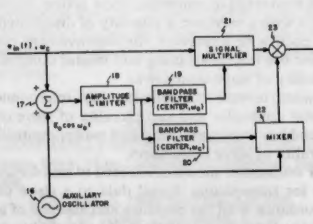
demodulation means producing output signals in response to said amplifier means.

4,328,591

METHOD AND APPARATUS FOR SIGNAL DETECTION, SEPARATION AND SUPPRESSION

Elie J. Baghdady, 21 Overlook Dr., Weston, Mass. 02193

Filed Apr. 23, 1979, Ser. No. 32,405
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—303 **13 Claims**



1. A method of suppressing the strongest of a plurality of signals linearly combined in a signal received by a receiver wherein said strongest signal carries modulation including at

least amplitude modulation; comprising the steps of: multiplying the received signal with a modulation wipe off signal derived from the received signal and a reference frequency signal to collapse the frequency spectrum of the strongest signal by suppressing and diverting power out of any amplitude and exponent modulation sidebands into a narrow band of frequencies which can be effectively filtered to suppress the strongest signal; and filtering out said narrow band of frequencies.

DESIGN PATENTS

GRANTED MAY 4, 1982

ERRATA

For CLASS	See PATENT NO.
D34–029	264,200
D34–034	264,201

264,140

SHIN GUARD

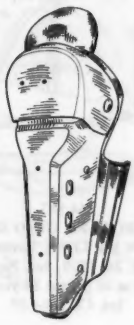
David C. Jenkins, Toronto, Canada, assignor to Cooper Canada Limited, Toronto, Canada

Filed Apr. 2, 1979, Ser. No. 25,838

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—27



264,141

HELMET FACE SHIELD MOUNTING BRACKET

Arne Hellberg, Grabo, Sweden, assignor to Hellberg Protection Handelsbolag, Varberg, Sweden

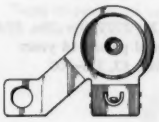
Filed Mar. 22, 1979, Ser. No. 23,134

Claims priority, application Sweden, Sep. 25, 1978, 782184

Term of patent 14 years

Int. Cl. D02—*03*

U.S. Cl. D2—233



264,142

SWIM GOGGLES

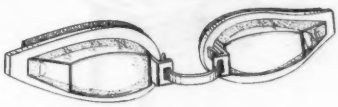
Simon C. Fireman, Quincy, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.

Filed Jan. 14, 1980, Ser. No. 111,582

Term of patent 14 years

Int. Cl. D2—*03*

U.S. Cl. D2—234



264,143

SKATE BOOT

Philip V. Chiarella, Hampstead, Canada, assignor to Les Produits Sportifs Micron Inc.-Micron Sports Products Inc., Montreal, Canada

Continuation-in-part of Ser. No. 802,235, May 31, 1977, abandoned. This application Feb. 4, 1980, Ser. No. 117,996

Term of patent 14 years

Int. Cl. D2—*04*

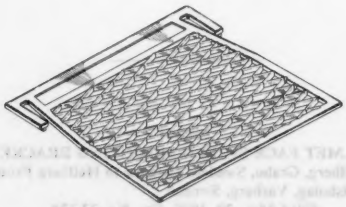
U.S. Cl. D2—275

264,144
COLLAR FOR TASSELS
Kenneth E. Kampfe, Omaha, Nebr., assignor to Willsie Cap and Gown Company, Omaha, Nebr.
Filed Mar. 7, 1980, Ser. No. 128,109
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—448

264,145
PRINT FILE BOX
Miller Outcalt, 2036 Broadway, Santa Monica, Calif. 90404
Filed May 16, 1980, Ser. No. 150,316
Term of patent 3½ years
Int. Cl. D3—*02*
U.S. Cl. D3—35

264,146
SPORTS BAG
Johnnie G. Davis, Mexico City, Mexico, assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Jun. 5, 1980, Ser. No. 156,515
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—36

264,147
PAINT ROLLER GRID SCREEN
Victor E. Heath, 17476 Via Lindo, Tustin, Calif. 92680
Filed Dec. 26, 1979, Ser. No. 107,100
Term of patent 14 years
Int. Cl. D4—*99*
U.S. Cl. D4—38.2



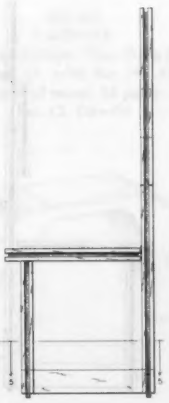
264,148
COMBINED SWING FOR INFANT AND REMOVABLE CANOPY THEREFOR
Albert W. Gebhard, Denver, Colo., assignor to Gerico, Inc., Denver, Colo.
Filed Jul. 23, 1979, Ser. No. 59,609
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—4

264,149
CHAIR
Randall P. Buhk, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1978, Ser. No. 908,147
The portion of the term of this patent subsequent to Oct. 23, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

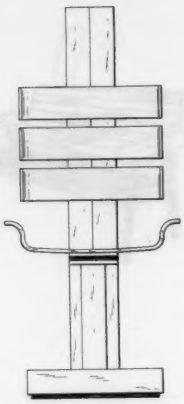
264,150
CHAIR
John W. Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed May 18, 1979, Ser. No. 40,443
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

264,151
SEAT
Thomas P. Sauls, P.O. Box 1138, Dunnellon, Fla. 32630, and Douglas M. Lane, Rte. 3, Box 588, Crystal River, Fla. 32629
Filed Feb. 21, 1979, Ser. No. 13,032
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—60

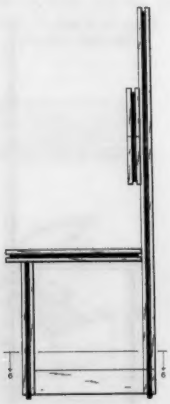
264,152
CHAIR
Steven D. Gageby, 2025 N. Bradley St., St. Paul, Minn. 55117
Filed Jul. 19, 1979, Ser. No. 58,909
The portion of the term of this patent subsequent to Oct. 10, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



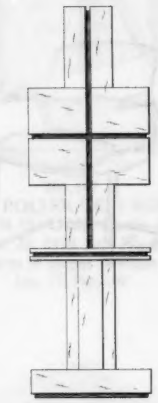
264,153
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Jul. 19, 1979, Ser. No. 58,911
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



264,154
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Jul. 17, 1979, Ser. No. 58,910
The portion of the term of this patent subsequent to May 4, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76



264,155
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Jul. 17, 1979, Ser. No. 58,913
The portion of the term of this patent subsequent to May 4, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76



264,156
CHAIR
Mitchell G. Lustig, 304 Greenwood St., Newton Centre, Mass. 02159
Filed Jan. 25, 1980, Ser. No. 115,769
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76

264,157
INSTRUMENT HOLDER

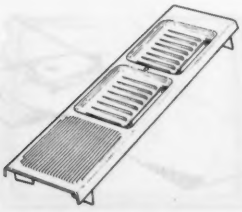
Dave Karsikas, 23 Joyce Crescent, Belleville, Ontario, Canada (K8N 1Y6)

Filed Feb. 11, 1980, Ser. No. 120,653
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—85

264,158
BATHTUB TRAY

Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia

Filed Feb. 22, 1980, Ser. No. 123,554
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—86



264,159
FOLDING SHELF

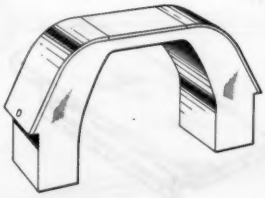
Ruth K. Bennett, and Frank P. Bennett, both of 1248 Surf Rd., Riviera Beach, Fla. 33404

Filed Nov. 19, 1979, Ser. No. 95,560
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—113

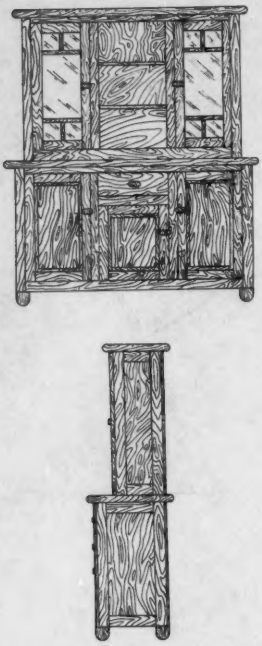
264,160
CABINET

Jerry H. Swartz, 33412 Galleon Way, Dana Point, Calif. 92629

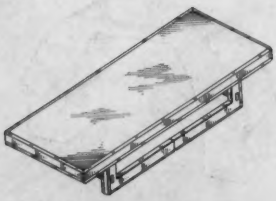
Filed Aug. 17, 1979, Ser. No. 67,560
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—168



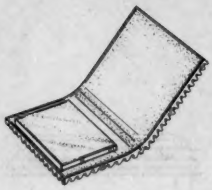
264,161
SIDEBOARD
Maugirard J. Claude, 8, Allee de la Marelle, 91350 Grigny, France
Filed Jul. 24, 1979, Ser. No. 60,153
Claims priority, application France, Jan. 24, 1979, 79 401
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—172



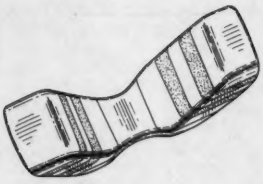
264,162
TABLE
Ernesto Azzalin, 411 E. 57th St., New York, N.Y. 10022
Filed Sep. 10, 1979, Ser. No. 74,160
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



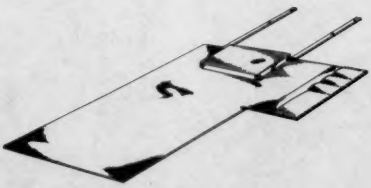
264,163
BATHTUB MAT
William J. Chapman, 53 Lilac Way, Ventura, Calif. 93003
Filed Dec. 26, 1979, Ser. No. 106,653
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



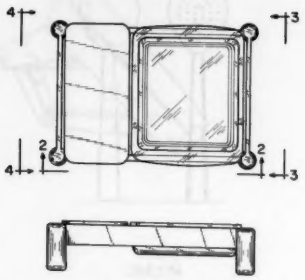
264,164
ELBOW REST
Cosmo Salibello, 3404-19th Ave., Unit 206, Forest Grove, Oreg. 97116, and Nicholas J. Zirpolo, 612 Channing, Palo Alto, Calif. 94304
Filed Mar. 31, 1980, Ser. No. 135,507
Term of patent 7 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



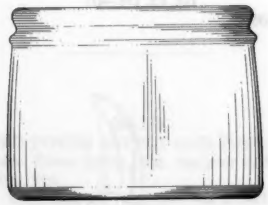
264,165
LOUNGING MAT WITH PILLOW AND POCKETS
Donna M. McVeigh, 74-071 El Cortez Ave., Palm Desert, Calif. 92260
Filed Apr. 25, 1979, Ser. No. 33,138
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209

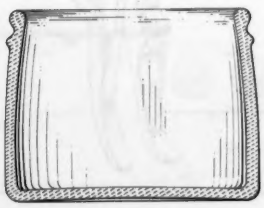


264,166
COMBINED CUTTING BOARD, SERVING DISH AND SUPPORT STAND
Kenneth R. LeVan, Kintnersville, Pa., assignor to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 969,245, Dec. 13, 1978. This application Apr. 6, 1981, Ser. No. 251,474
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—3

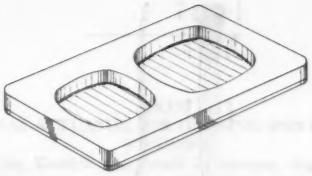


264,167
BAIN-MARIE OR SIMILAR ARTICLE
George B. Jensen, deceased, late of Syracuse, N.Y., and by Stanley F. Campion, executor, Fayetteville, N.Y., assignors to Syracuse China Corporation, Syracuse, N.Y.
Filed Nov. 2, 1979, Ser. No. 90,545
Term of patent 14 years
Int. Cl. D07—*01, 02*
U.S. Cl. D7—23

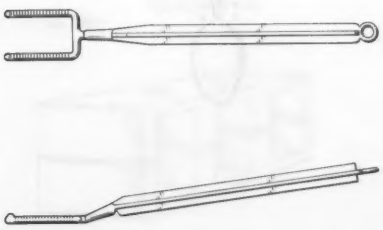




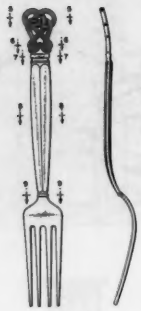
264,168
HOLDER FOR DIFFERENT SIZE JARS
Esther L. Teuber, and George F. Teuber, both of Star Rte. Box 190E, Umpqua, Oreg. 97486
Filed Apr. 25, 1980, Ser. No. 144,175
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—71



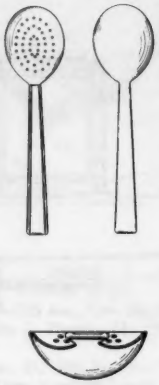
264,169
CANDY DIPPING TOOL
Ervan E. Guttman, Cincinnati, Ohio, assignor to The Ervan Guttman Company, Cincinnati, Ohio
Filed May 23, 1980, Ser. No. 152,652
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—103



264,170
ARTICLE OF FLATWARE OR SIMILAR ARTICLE
Bert England, Los Angeles, Calif., assignor to Towle Manufacturing Company, Boston, Mass.
Filed Apr. 27, 1979, Ser. No. 33,572
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137

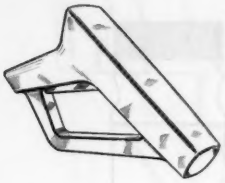


264,171
SPOON
Miguel A. Velasco, 63 Pawnee Ave., Oakland, N.J. 07436
Filed Apr. 4, 1980, Ser. No. 137,175
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—140

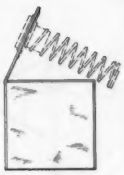


264,172
PRUNER
Christopher R. B. Harrison, Mid-Glamorgan, Wales, and Alan K. Pittaway, High Wycombe, England, assignors to Wilkinson Sword Limited, Buckinghamshire, England
Filed Jul. 13, 1979, Ser. No. 57,186
Claims priority, application United Kingdom, Feb. 6, 1979, 988438/79
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—05

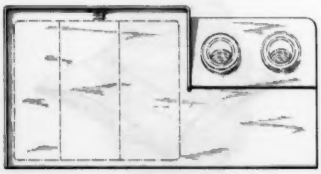
264,173
POWERED IMPLEMENT HANDLE
Wilbur Hampel, Spring Park, Minn.; Robert W. Johnson, Westport, Conn.; Douglas W. Smith, Oakland, N.J., and Eugene J. Casey, Jr., Rowayton, Conn., assignors to The Toro Company, Minneapolis, Minn.
Filed Jan. 16, 1980, Ser. No. 112,534
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



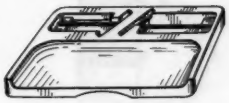
264,174
COMBINED POWER SUPPLY AND TOOL HOLDER
Jean C. Fielder, Silver Spring, Md., assignor to Pace Incorporated, Laurel, Md.
Filed Jun. 29, 1979, Ser. No. 53,542
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



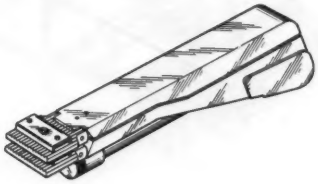
264,175
COMBINED POWER SUPPLY AND TOOL HOLDER
Jean C. Fielder, Silver Spring, Md., assignor to Pace Incorporated, Laurel, Md.
Filed Jun. 29, 1979, Ser. No. 53,543
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



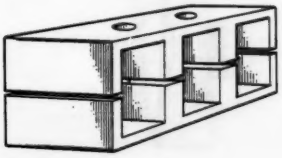
264,176
SHARPENER FOR SCISSORS
Olavi Linden, Billnäs, Finland, assignor to Oy Fiskars AB, Helsinki, Finland
Filed Feb. 6, 1979, Ser. No. 9,893
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—93



264,177
THERMAL ACTUATOR FOR OPENING AND CLOSING WINDOWS
Albert Cole, Keswick, and Ronald F. Sturgeon, Bognor Regis, both of England, assignors to Thermoforce Limited, Cockermouth, England
Filed Nov. 21, 1978, Ser. No. 962,619
Claims priority, application United Kingdom, Jun. 19, 1978, 985089/78
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—336

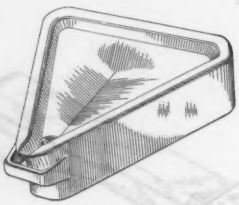


264,178
COUPLING
Bengt Magner, Mellösa, Sweden, assignor to Opto-System AB, Mellösa, Sweden
Filed Sep. 28, 1979, Ser. No. 80,778
Claims priority, application Sweden, Mar. 30, 1979, 790820
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382

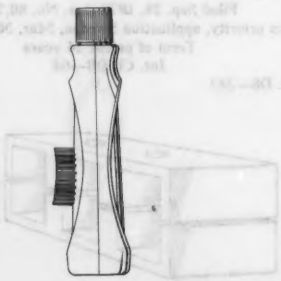


264,179
DISPENSING CONTAINER
Barry Dash, Englewood Cliffs, N.J., assignor to The J. B. Williams Company, Inc., New York, N.Y.
Filed Oct. 22, 1979, Ser. No. 87,171
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—319

264,180
LIQUID COLLECTION AND STORAGE CONTAINER
Richard O. Bartz, 7017 Mark Terrace Dr., Edina, Minn. 55435
Filed Mar. 27, 1980, Ser. No. 134,707
Term of patent 14 years
Int. Cl. D9—*07*; D12—*99*
U.S. Cl. D9—337

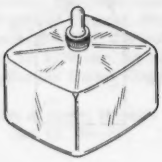


264,181
COMBINED BOTTLE AND BRUSH
Carol A. Booso, 3929 Hazel Ave., Cincinnati, Ohio 45212
Filed May 2, 1980, Ser. No. 146,044
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—337

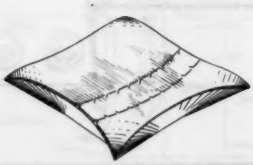


264,182
COMBINED JAR AND LID
Roy Kemp, Ashford; Douglas R. Compton, Chalfont St. Giles, and Allan J. Boyle, St. Albans, all of England, assignors to General Foods Ltd., Oxfordshire, England
Filed Mar. 1, 1979, Ser. No. 16,484
Claims priority, application United Kingdom, Sep. 3, 1978, 986234
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—352

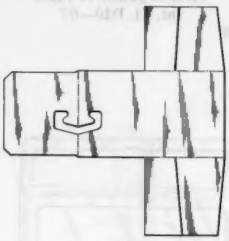
264,183
BOTTLE
Abraham Y. Schultz, 1233 Guelbreth La., St. Louis, Mo. 63141
Filed Apr. 14, 1980, Ser. No. 140,108
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—401



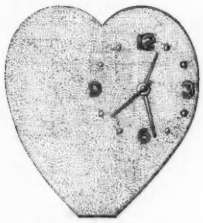
264,184
CONTAINER FOR FOOD OR THE LIKE
John J. Austin, La Grange, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Jan. 21, 1980, Ser. No. 113,709
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—416



264,185
BLANK FOR A SOCK PACKAGE
John T. Roberts, Rte. 5, Box 198-B, Clover, S.C. 29710
Filed Mar. 31, 1980, Ser. No. 136,079
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



264,186
TEXTURED CLOCK
Joe L. Felton, 831 S. Fiske Blvd., Rockledge, Fla. 32955
Filed Jun. 13, 1980, Ser. No. 159,069
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

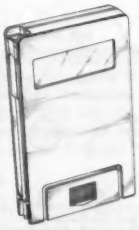


264,187
WRISTWATCH
Susumu Suzuki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Sep. 28, 1979, Ser. No. 79,916
Claims priority, application Japan, Apr. 18, 1979, 54-15764
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

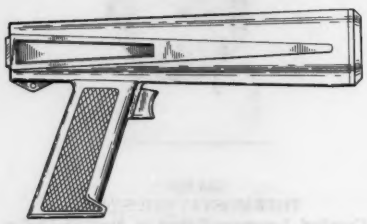
264,188
WRIST WATCH
Gianni Bvlgari, Rome, Italy, assignor to Anthos, S.A., Geneva, Switzerland
Filed Jun. 1, 1979, Ser. No. 44,383
Term of patent 3½ years
Int. Cl. D10—*02*
U.S. Cl. D10—39

264,189
THERMOSTAT HOUSING
Ted G. Crawford, Longmont; Robert M. Neel, Ft. Collins, and Douglas K. Ewald, Aurora, all of Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.
Filed Dec. 17, 1979, Ser. No. 104,135
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50

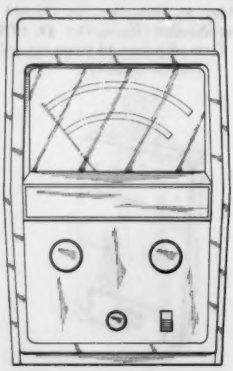
264,190
ELECTRONIC THERMOMETER
Willy Müller, Guggerstrasse 13, 8702 Zollikon, Switzerland
Filed Mar. 31, 1980, Ser. No. 135,903
Claims priority, application Hague, Oct. 19, 1979, 69474
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



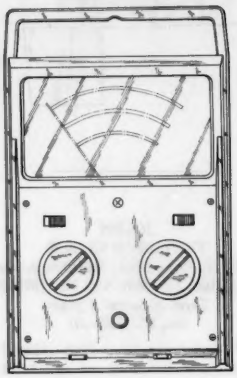
264,191
DEPTH SOUNDER
Timothy J. Jondrow, Salem, Oreg., assignor to Morrow Electronics, Inc., Salem, Oreg.
Filed Aug. 27, 1979, Ser. No. 70,053
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



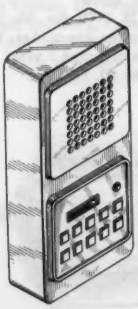
264,192
ELECTRONIC TEST METER HOUSING
Hugh T. Greenlee, Cleveland; Roy P. Hess, Vermillion, both of Ohio; Donald C. McKinnon, and James R. Glasser, both of Cheboygan, Mich., assignors to Fox Valley Instrument Company, Cheboygan, Mich.
Filed Apr. 24, 1980, Ser. No. 143,174
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—80



264,193
ELECTRONIC TEST METER HOUSING
Hugh T. Greenlee, Cleveland; Roy P. Hess, Vermillion, both of Ohio; Donald C. McKinnon; James R. Glasser, both of Cheboygan, Mich., and Robert L. Umbarger, Munroe Falls, Ohio, assignors to Fox Valley Instrument Company, Cheboygan, Mich.
Filed Apr. 24, 1980, Ser. No. 143,440
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—80

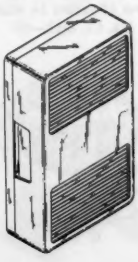


264,194
DOOR ALARM
Michael G. Jaretsky, Sparta, N.J., assignor to Baker Industries, Inc., Parsippany, N.J.
Filed Aug. 13, 1979, Ser. No. 66,347
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



264,195
REFLECTING MARKER
Jack L. Jacobs, P.O. Box 727, West Columbia, S.C. 29202
Filed Mar. 24, 1980, Ser. No. 133,551
Term of patent 14 years
Int. Cl. D10—*06*; D25—*02*
U.S. Cl. D10—111

264,196
WALL CHIME
John Doggart, Macclesfield, England, assignor to V & E Friedland Limited, England
Filed Sep. 27, 1979, Ser. No. 79,245
Claims priority, application United Kingdom, Feb. 12, 1979, 988531/79
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—118



264,197
RING
Edward V. Smugala, 835 St. Bartholomew, Cahokia, Ill. 62206
Filed Oct. 26, 1979, Ser. No. 88,593
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—32

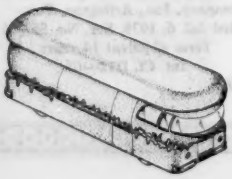
264,198
NOVELTY FIGURINE
Harlan S. Leeds, 3667 Northhaven, Dallas, Tex. 75221
Filed Feb. 28, 1980, Ser. No. 125,701
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—160

264,199
FOLDING MOTORCYCLE RAMP
Alfred L. Wood, Arlington, Tex., assignor to Airline Equipment and Service Company, Inc., Arlington, Tex.
Filed Jul. 6, 1979, Ser. No. 55,453
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—32

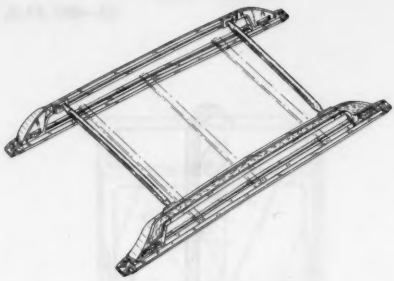
264,200
CONVEYOR SEGMENT
F. Richard Imboden; Kenneth E. Tribbett, both of Austin, Minn., and Franklin J. Smith, Diablo, Calif., assignors to Geo. A. Hormel & Company, Austin, Minn.
Filed Jan. 28, 1980, Ser. No. 116,107
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D34—29

264,201
LIFT TRUCK BODY
Warner K. Brown, Battle Creek, Mich., and Dennis M. Lanci, Renton, Wash., assignors to Clark Equipment Company, Buchanan, Mich.
Filed Sep. 14, 1979, Ser. No. 75,434
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—34

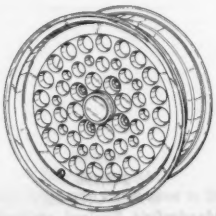
264,202
VEHICLE
Philip M. Elkins, 6909 Cedros Ave., Van Nuys, Calif. 91405, and Bernard M. Greene, 7512 Sunny Brae Ave., Canoga Park, Calif. 91306
Filed Jan. 14, 1980, Ser. No. 111,763
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—83



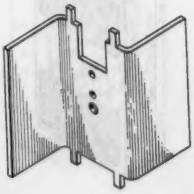
264,203
VEHICLE LUGGAGE CARRIER
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed May 15, 1979, Ser. No. 39,197
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



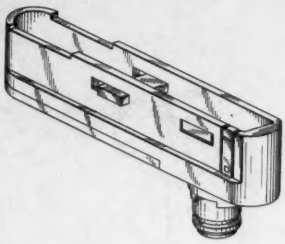
264,204
WHEEL
Werner Bauer, Dortmund, Fed. Rep. of Germany, assignor to Centra Leichtmetallräder Produktions GmbH, Pfalz, Fed. Rep. of Germany
Filed Feb. 15, 1980, Ser. No. 121,974
Claims priority, application Fed. Rep. of Germany, Aug. 15, 1979, 7AR412-79
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—210



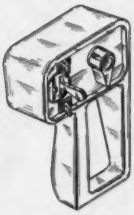
264,205
HEAT SINK OR SIMILAR ARTICLE
John Logeman, Park Ridge, and Herbert L. Shrader, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 5, 1979, Ser. No. 72,800
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—23



264,206
CONNECTOR FOR TRACK LIGHTING SYSTEM
Robert Heritage, London, England, assignor to Rotaflex (Great Britain) Limited, London, England
Filed Jun. 14, 1979, Ser. No. 48,681
Claims priority, application United Kingdom, Dec. 22, 1978, 987817/78
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



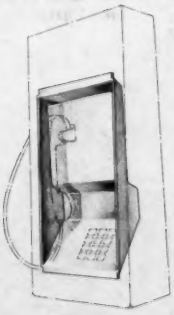
264,207
VALVE OPERATING REMOTE CONTROL DEVICE
Edward E. Griffiths, 3200 Polaris St., Bldg. #23, Las Vegas, Nev. 89102
Filed Jun. 22, 1979, Ser. No. 51,116
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—37



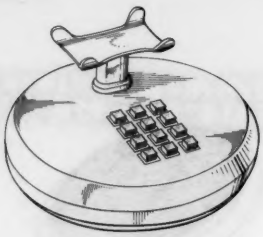
264,208
LOUDSPEAKER
Hideyuki Matsubara, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 29, 1979, Ser. No. 88,938
Claims priority, application Japan, Apr. 27, 1979, 54-17390
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30

264,209
LOUDSPEAKER
Hideaki Ishizaki, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 29, 1979, Ser. No. 88,939
Claims priority, application Japan, Apr. 27, 1979, 54-17387
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30

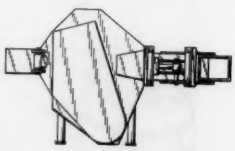
264,210
FRONT PANEL FOR A PUBLIC TELEPHONE SET
Donald M. Genaro, Haworth; Thomas J. Kelly, Colts Neck, both of N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 884,604, Mar. 8, 1978, Pat. No. Des. 256,692. This application Mar. 10, 1980, Ser. No. 128,480
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—55



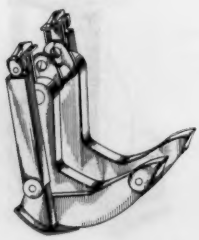
264,211
TELEPHONE BASE SET
Robert E. Hillmer, Toronto, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Jul. 16, 1979, Ser. No. 57,806
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—62



264,212
TREE SHAKER
Basil W. Savage, Sr., Madill, Okla., assignor to Savage Equipment, Inc., Madill, Okla.
Filed Jul. 16, 1979, Ser. No. 58,131
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—28



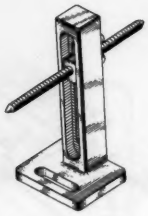
264,213
UPROOTING IMPLEMENT
Sören Hedblom, Box 235, S-820 23 Bergvik, Sweden
Filed Dec. 18, 1979, Ser. No. 104,826
Claims priority, application Sweden, Jun. 20, 1979, 79-1509
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—28



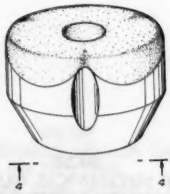
264,214
MOBILE BEVERAGE COOLING AND DISPENSING UNIT
Lee Bowen, Michigan City, and Gordon Miller, South Bend, both of Ind., assignors to Tyler Refrigeration Corporation, Niles, Mich.
Filed Nov. 19, 1979, Ser. No. 95,360
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—116

264,215
DISPENSING HEAD FOR PARTICULATE MATERIAL
Joel R. Kaplan, Buchanan; Thomas J. Johnston, Mount Kisco, both of N.Y., and Aloysious A. Jendrisak, Cuyahoga Falls, Ohio, assignors to General Foods Corporation, White Plains, N.Y.
Filed Mar. 14, 1980, Ser. No. 130,324
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—111

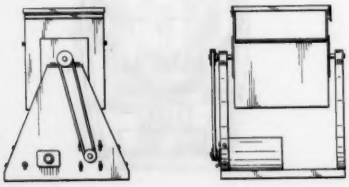
264,216
ADJUSTABLE STOP FOR POSITIONING A WORKPIECE IN A MILLING MACHINE OR THE LIKE
Walter E. Saupe, Corfu, and Gregory D. Crawford, Batavia, both of N.Y., assignors to Trison Manufacturing Inc., Corfu, N.Y.
Filed Mar. 12, 1980, Ser. No. 129,416
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—131



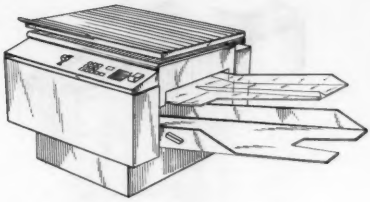
264,217
DRILL BIT PROTECTOR
Benjiman G. Prause, 18403 Huffsmith Kohrville Rd., and Hollis Marlow, 11239 Lacy Rd., both of Tomball, Tex. 77375
Filed Jul. 17, 1979, Ser. No. 58,313
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D15—138



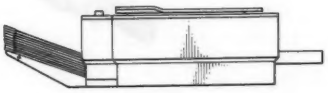
264,218
AUTOMATED MIXING MACHINE
Terry E. Neuner, 504 Westmount Ave., Columbia, Mo. 65201, and Michael E. Gresham, Rte. 5, Box 360, Fulton, Mo. 65251
Filed Mar. 3, 1980, Ser. No. 126,544
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—147



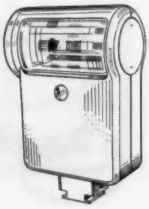
264,219
COPYING MACHINE
William L. Plumb, New York; Andrew T. Serbinski, Brooklyn; Steven Bellofatto, New York; Melinda M. Currier, New York, and Edward C. H. Lai, New York, all of N.Y., assignors to Savin Corporation, Valhalla, N.Y.
Filed Mar. 10, 1980, Ser. No. 129,040
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



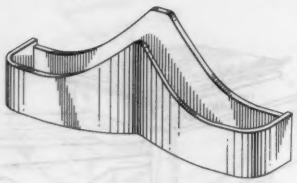
264,220
COPYING AND SORTING APPARATUS
R. Clark DuBois, Fairfield, and John C. Hamma, Milford, both of Conn., assignors to Gradco/Dendoki, Inc., Newport Beach, Calif.
Filed Jul. 24, 1980, Ser. No. 171,850
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



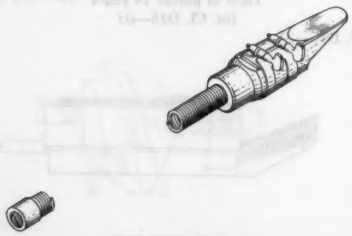
264,221
ELECTRONIC FLASH UNIT
Norbert Schlagheck; Herbert Schultes, both of Fuerstenfeldbruck, and Hermann R. Segers, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Nov. 19, 1979, Ser. No. 95,540
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, G164/791
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42



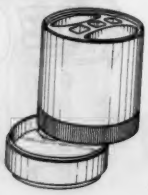
264,222
EYEGLASS HOLDER
Ralph Slepian, 4531 Woodhurst Dr., Youngstown, Ohio 44515
Filed Jan. 14, 1980, Ser. No. 111,883
Term of patent 14 years
Int. Cl. D16—*06*; D6—*04*
U.S. Cl. D16—129



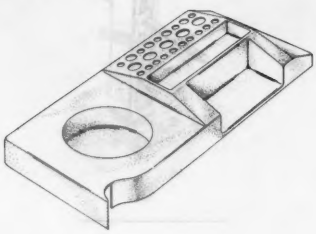
264,223
WIND INSTRUMENT
Frank H. Lawson, 1608 Trona Way, San Jose, Calif. 95125
Filed Dec. 26, 1979, Ser. No. 106,949
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D17—10



264,224
DESK RECEPTACLE
Walter Henkels, Holunderweg 1, 5142 Hückelhoven, Fed. Rep. of Germany
Filed Aug. 13, 1979, Ser. No. 65,970
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, MR 124
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



264,225
DRAFTING TABLE ORGANIZER
Glenn P. Hermes, 295 E. River St., New Braunfels, Tex. 78130
Filed Oct. 15, 1979, Ser. No. 85,026
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77



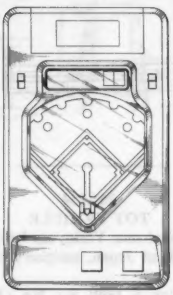
264,226
ELECTRONIC MECHANICAL BASEBALL GAME HOUSING OR THE LIKE
Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.
Filed Feb. 4, 1980, Ser. No. 117,845
Claims priority, application Japan, Aug. 3, 1979, 54-032534
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

264,227

ELECTRONIC HAND-HELD BASEBALL GAME HOUSING OR THE LIKE

Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.

Filed Feb. 4, 1980, Ser. No. 117,970
Claims priority, application Japan, Dec. 24, 1979, 54-54608
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

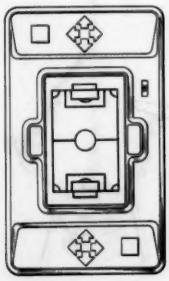


264,228

ELECTRONIC HAND-HELD SOCCER GAME HOUSING OR THE LIKE

Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.

Filed Feb. 4, 1980, Ser. No. 118,000
Claims priority, application Japan, Dec. 17, 1979, 54-053039
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

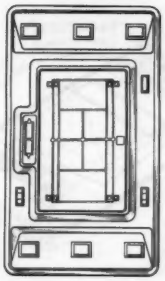


264,229

HAND-HELD ELECTRONIC TENNIS GAME HOUSING OR THE LIKE

Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.

Filed Mar. 13, 1980, Ser. No. 130,010
Claims priority, application Japan, Oct. 29, 1979, 54-45435
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

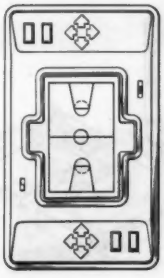


264,230

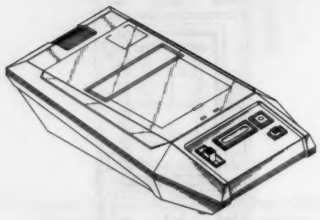
HAND-HELD ELECTRONIC BASKETBALL GAME HOUSING OR THE LIKE

Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.

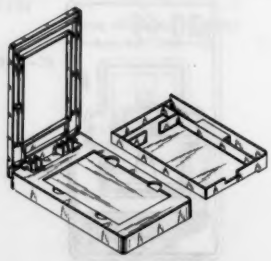
Filed Mar. 17, 1980, Ser. No. 130,991
Claims priority, application Japan, Nov. 19, 1979, 54-48470
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



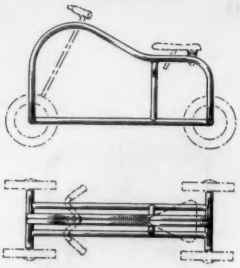
264,231
HOUSING FOR AN ELECTRONIC AMUSEMENT DEVICE
Akio Tsuyuki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Apr. 18, 1980, Ser. No. 141,473
Claims priority, application Japan, Oct. 9, 1979, 54-42681
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



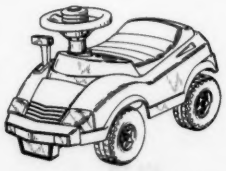
264,232
HOLDER FOR FIXEDLY RETAINING TOY TEMPLATES
Karen E. Lang, Rosemead, Calif., assignor to Tomy Corporation, Carson, Calif.
Filed Feb. 28, 1980, Ser. No. 125,375
Term of patent 14 years
Int. Cl. D21—*99*
U.S. Cl. D21—59



264,233
VEHICLE FRAME
Samuel P. Hundley, 1512 W. Springfield Ave., Champaign, Ill. 61820
Filed Apr. 29, 1980, Ser. No. 145,506
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D21—71



264,234
TOY VEHICLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Yukio Ishige, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Jan. 8, 1980, Ser. No. 110,503
Claims priority, application Japan, Jul. 13, 1979, 54-29280
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—78



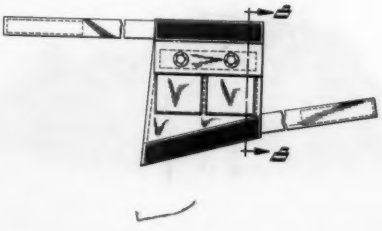
264,235
BICYCLE EXERCISER
Jose L. Beistegui Chirapozu, Vitoria, Spain, assignor to Beistegui Hermanos, S.A., Vitoria, Spain
Filed Aug. 21, 1979, Ser. No. 69,109
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—194

264,236
ARM WRESTLING EXERCISE TABLE
Ronald J. Vyhlidal, 1648 W. 10th St., Fremont, Nebr. 68025
Filed Nov. 20, 1979, Ser. No. 96,050
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195

264,237
EXERCISER
Raymond L. McCaleb, Edina, and Johnnie W. Norwood, Minneapolis, both of Minn., assignors to Normac, Inc., Edina, Minn.
Filed Sep. 14, 1979, Ser. No. 75,748
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198

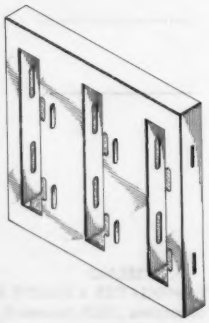
264,238
RING WITH HANDGRIPS FOR GROUP SKATING
John D. Maus, 176 Oneida Trail, Lake Mohawk, Malvern, Ohio 44644
Filed Feb. 14, 1980, Ser. No. 121,419
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—224

264,239
GOLF AID
Troy G. Grove, Jr., 1392 Westover Rd., Cleveland Heights, Ohio 44118
Filed Mar. 19, 1980, Ser. No. 131,816
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—234



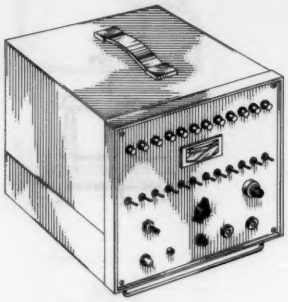
264,240
ADJUSTABLE HOLSTER
John E. Bianchi, 1601 Wilt Rd., Fallbrook, Calif. 92390
Filed Dec. 17, 1979, Ser. No. 104,035
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13

264,241
FILTER FOR A PAINT BOOTH OR THE LIKE
William Lovett, 2624 Range Rd., Los Angeles, Calif. 90065
Filed Aug. 30, 1979, Ser. No. 71,069
Term of patent 14 years
Int. Cl.[3] D23—*04*
U.S. Cl. D23—149

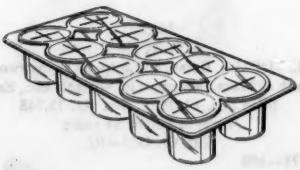


264,242
TREATMENT TABLE EXTENSION FRAME FOR SPINAL TRACTION
B. James LaRue, 5412 Diablo Dr., Sacramento, Calif. 95842
Filed Oct. 25, 1979, Ser. No. 88,000
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—7

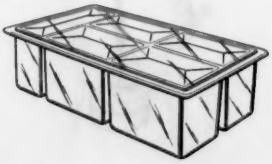
264,243
CABINET FOR ELECTRICAL WAVE GENERATOR AND MONITOR FOR PHYSICAL THERAPHY
Charles F. Merker, Glendale, Ariz., assignor to Sono-Therapy Institute, Inc., Phoenix, Ariz.
Filed Dec. 5, 1979, Ser. No. 100,432
Term of patent 14 years
Int. Cl. D24—*1;* D13—*03*
U.S. Cl. D24—17



264,244
MEDICINAL SPONGE CONTAINER
C. Eric Olsen, Oxnard, Calif., assignor to Auburn Enterprises, Inc., Ventura, Calif.
Filed Aug. 15, 1979, Ser. No. 66,689
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D24—31



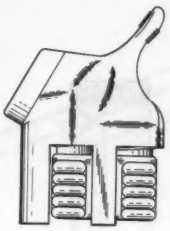
264,245
LAPAROTOMY SPONGE CONTAINER
C. Eric Olsen, Oxnard, Calif., assignor to Auburn Enterprises, Inc., Ventura, Calif.
Filed Aug. 15, 1979, Ser. No. 66,690
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—31



264,246
SURGICAL ASPIRATION CATHETER
Fred V. G. Ekbladh, Särö, and Ivan E. Olsson, Frillesas, both of Sweden, assignors to Astra-Meditec Aktiebolag, Askim, Sweden
Filed Sep. 6, 1979, Ser. No. 73,090
Claims priority, application Sweden, Mar. 23, 1979, 79-760
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54

264,247
CULTURE VIAL OR THE LIKE
Louis T. Pagels, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.
Division of Ser. No. 918,433, Jun. 23, 1978. This application Jul. 9, 1980, Ser. No. 167,379
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—56

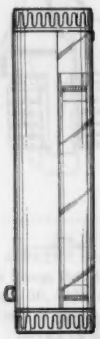
264,248
MIDSTREAM COLLECTION DEVICE
Carl J. Steigerwald, Wauconda, and Terry N. Layton, Arlington Heights, both of Ill., assignors to The Kendall Company, Boston, Mass.
Filed Dec. 12, 1979, Ser. No. 102,671
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—57



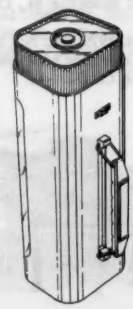
264,249
EAR PLUG
Charles Leight, 3511 Shoreheights Dr., Malibu, Calif. 90265
Filed Sep. 10, 1979, Ser. No. 73,634
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—67

264,250
HOUSE
Henry J. McKinney, 133 Brookline St., Chestnut Hill, Mass. 02167
Filed Sep. 4, 1979, Ser. No. 72,155
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22

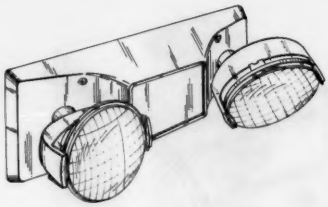
264,251
LANTERN
Kwok-Hung Liu, Kowloon, Hong Kong, assignor to Transistolite Manufacturing Limited, Central, Hong Kong
Filed Aug. 27, 1979, Ser. No. 69,767
Claims priority, application United Kingdom, May 24, 1979, 990062/79
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—42



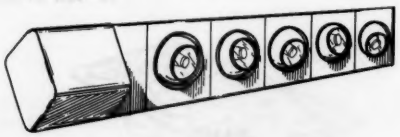
264,252
LAMP
Yin Chui, Kowloon, Hong Kong, assignor to Lung Sun Plastic & Metal Factory Limited, Kowloon, Hong Kong
Filed Nov. 29, 1979, Ser. No. 98,305
Claims priority, application United Kingdom, Jun. 19, 1979, 990343/79
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—42



264,253
WALL MOUNTED LIGHTING FIXTURE
Willfred Goldschmidt, Weston; Wiley A. Kittrell, Greenwich, both of Conn., and David G. Bragin, Brooklyn, N.Y., assignors to Dual-Lite, Inc., Newtown, Conn.
Filed Sep. 28, 1979, Ser. No. 79,973
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—63



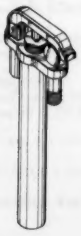
264,254
MULTIPLE SPOTLIGHT FITTING
Robert Heritage, London, England, assignor to Rotaflex (Great Britain) Limited, London, England
Filed Jun. 14, 1979, Ser. No. 48,680
Claims priority, application United Kingdom, Jan. 25, 1979, 988245/79
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—74



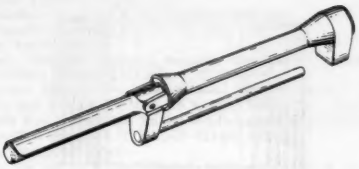
264,255
LAMP
Frederick L. Stohl, R.R. 2, Box 54, Califon, N.J. 07830
Filed Jan. 16, 1980, Ser. No. 112,790
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—101

264,256
TOBACCO TESTER
Daniel J. Benson, 221 - 91st Ave. NE., Minneapolis, Minn. 55434
Filed Jul. 20, 1979, Ser. No. 59,305
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—4

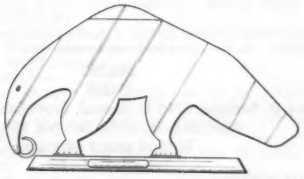
264,257
CIGARETTE LIGHTER
Sadao Yoshinaga, Tokyo, Japan, assignor to Yoshinaga Prince Co., Ltd., Tokyo, Japan
Filed Apr. 13, 1979, Ser. No. 29,770
Claims priority, application Japan, Oct. 20, 1978, 53-544587
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—39



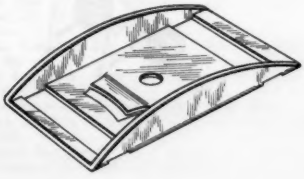
264,258
HAIR CURLING IRON
Jean-Claude Zago, 6286 Belleau, Montreal, Province of Quebec, Canada (H1P 1H6)
Filed Nov. 26, 1979, Ser. No. 97,565
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



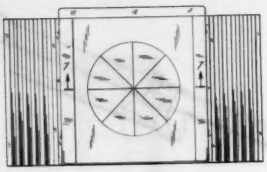
264,259
ANTFARM
Joseph W. Berteloot, 310 Ladera, San Jose, Calif. 95134
Filed May 30, 1980, Ser. No. 154,804
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

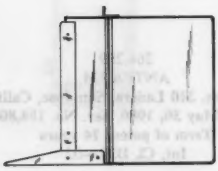


264,260
FLEA COLLAR BUCKLE
Joseph Terino, Jr., North Providence, R.I., assignor to Tercat Tool & Die Co., Inc., Providence, R.I.
Filed Jan. 7, 1980, Ser. No. 109,863
Term of patent 14 years
Int. Cl. D30—*01*
U.S. Cl. D30—38



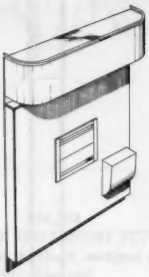
264,261
KITTY LITTER OUTHOUSE
Eugene Durocher, 99 Strong St., Wallington, N.J. 07057
Filed May 12, 1980, Ser. No. 149,096
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



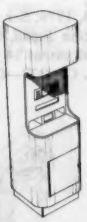


264,262
CART
Robert D. Scripter, 6212 E. Mescal, Scottsdale, Ariz. 85254
Filed Dec. 21, 1979, Ser. No. 106,233
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—24

264,263
TELLER MACHINE MODULE
Charles Hauser, and Sharon Johnson, both of Atlanta, Ga., assignors to The Central Trust Company, N.A., Cincinnati, Ohio
Filed Apr. 14, 1980, Ser. No. 140,237
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—28



264,264
TELLER MACHINE MODULE
Charles Hauser, and Sharon Johnson, both of Atlanta, Ga., assignors to The Central Trust Company, N.A., Cincinnati, Ohio
Filed Apr. 14, 1980, Ser. No. 140,238
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF MAY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
Mastalski, Henry; and Odom, James T., 4,327,534, Cl. 52-122.000.

A. W. Chesterton Company: *See*—
Chesterton, Arthur W.; and Bernier, Edgar R., 4,327,923, Cl. 277-124.000.

Abbes, Claude; De Villepoix, Raymond; and Rouaud, Christian, to Commissariat a l'Energie Atomique. Self-locking union. 4,327,942, Cl. 285-39.000.

Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., to Rockwell International Corporation. Muldem automatically adjusting to system expansion and contraction. 4,328,577, Cl. 370-84.000.

Abe, Kenichi, to Kabushiki Kaisha Sofard. Candle type illuminating lamp. 4,328,534, Cl. 362-295.000.

Abe, Masao; Kawahara, Haruo; Kogure, Yoichiro; Maeohmichi, Masahiro; Takeuchi, Tetsuo; and Karashima, Norihiko, to Tokyo Denryoku Kabushiki Kaisha; and Tokyo Shibaura Denki Kabushiki Kaisha, part interest to each. Control system of plants by means of electronic computers. 4,328,556, Cl. 364-900.000.

Abe, Naoto: *See*—
Nakadate, Takanori; Abe, Naoto; Kitahara, Kenichi; and Nakao, Hironobu, 4,328,283, Cl. 428-480.000.

Abe, Yukito: *See*—
Usuba, Takahiro; Iinuma, Kazuhiro; Suzuki, Soichi; and Abe, Yukito, 4,328,490, Cl. 340-715.000.

Abel, Heinz; Bruttel, Beat; and Buhler, Arthur, to Ciba-Geigy Corporation. Non-dusty pulverulent and granulated organic dye preparations. 4,328,220, Cl. 424-226.000.

Accumold AG: *See*—
Mettler, Diethelm, 4,328,077, Cl. 204-26.000.

ACF Industries, Incorporated: *See*—
Behle, Gunter R., 4,327,768, Cl. 137-553.000.

Aciers et Outillage Peugeot: *See*—
Barge, Jean A., 4,328,451, Cl. 318-596.000.

Ackley, Charles E., Jr.: *See*—
Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., 4,327,825, Cl. 198-380.000.

Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., to R. W. Hartnett Company. Capsule positioning guide and associated vacuum manifold for capsule orienting mechanisms. 4,327,825, Cl. 198-380.000.

Adam, Jean-Marie, to Ciba-Geigy Corporation. Anthraquinone compounds and mixtures thereof. 4,328,159, Cl. 260-374.000.

Adams, Brian J. Foldable pack belt. 4,327,853, Cl. 224-224.000.

Adams, John B., Jr., to Du Pont de Nemours, E. I., and Company. 2,3-Dihalo-6-quinoxalinesulfonyl fluorides. 4,328,228, Cl. 424-250.000.

Adams, William T., Jr.: *See*—
McCauley, Edward D.; Farlow, James C.; and Adams, William T., Jr., 4,327,798, Cl. 164-56.100.

Addy, Clarence A.; and Krizen, William C. Sewing needle. 4,327,655, Cl. 112-222.000.

Adler, Karl-Heinz; Fritz, Adolf; Brand, Gunter; and Kielbas, Eugen, to Robert Bosch GmbH. Inductive signal source for internal combustion engine ignition system. 4,328,439, Cl. 310-70.00R.

Aerojet-General Corporation: *See*—
Wrightson, John M., 4,328,281, Cl. 428-423.100.

Aeschbach, Peter: *See*—
Friedli, Hans; Gut, Edwin; and Aeschbach, Peter, 4,328,085, Cl. 204-245.000.

Affolder, Steven L., to CTS Corporation. Apparatus for controlling the movement of press components. 4,327,996, Cl. 425-78.000.

AGA Aktiebolag: *See*—
Knoos, Stellan, 4,327,550, Cl. 60-522.000.

Agarwal, Suresh C.: *See*—
Koller, Stefan; Eugster, Peter; and Agarwal, Suresh C., 4,327,999, Cl. 8-526.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Miranday, Jean-Pierre; Jacoboni, Charles; and de Pape, Robert, 4,328,318, Cl. 501-40.000.

Agency of Industrial Science & Technology: *See*—
Takenaka, Hiroyasu; and Torikai, Eiichi, 4,328,086, Cl. 204-296.000.

AGFA-Gevaert Aktiengesellschaft: *See*—
Vanhorebeek, Remi; Geyken, Erwin; Mayer, Peter; Schausberger, Helmut; and Brunner, Rudolf, 4,327,988, Cl. 354-320.000.

AGFA-GEVAERT N.V.: *See*—
Deconinck, Hugh F., 4,327,456, Cl. 15-102.000.

Agterhof Beheer N.V.: *See*—
van der Laan, Jan G., 4,327,524, Cl. 49-425.000.

Ahrweiler, Karl-Heinz: *See*—
Kusters, Eduard; and Ahrweiler, Karl-Heinz, 4,327,468, Cl. 29-116.0AD.

Aichi Steel Works, Limited: *See*—
Yanagida, Yoshitsugu; Higuchi, Mitsuo; Ito, Yoshiaki; Nakaji, Shigeru; and Ehiro, Syogo, 4,327,466, Cl. 29-90.00R.

Aisin Seiki Kabushiki Kaisha: *See*—
Kawabata, Yasuhiro, 4,327,772, Cl. 137-625.480.
Watanabe, Yutoka, 4,328,052, Cl. 156-91.000.

Aizawa, Tatsuo: *See*—
Kato, Mamoru; Yamaura, Susumu; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 4,328,265, Cl. 427-146.000.

Akutagawa, Kenichi; Yoshida, Hitoshi; Hattori, Tadashi; Takata, Akira; and Fukuda, Tamotsu, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel intake system for internal combustion engines. 4,327,685, Cl. 123-402.000.

Akzona Incorporated: *See*—
Vis, Jan; and de Klein, Willem J., 4,328,112, Cl. 252-47.500.
Whitted, Hugh E., III, 4,327,471, Cl. 29-421.00R.

Alberghini, Alfred C.; and Donalson, Dennis C., to Sewell Plastics, Inc. Non-destructive dissolved gas volume testing method. 4,327,574, Cl. 73-19.000.

Albert Browne Limited: *See*—
Blake, Graham J., 4,328,182, Cl. 422-56.000.

Albright, Bill E.: *See*—
Reasons, Robert; and Albright, Bill E., 4,328,185, Cl. 422-82.000.

Aldridge, Lionel D.; and Trank, Robert, to Burroughs Corporation. Preassembled connecting and terminating apparatus for printed wiring boards. 4,327,954, Cl. 339-64.00M.

Alexander, Ronald J.; and Bainard, Dean R., to Garlock Inc. Disc brake boot seal method and article. 4,327,925, Cl. 277-212.0FB.

Alia, Francesco; and Barbati, Stefano, to Contraves Italiana S.p.A. Integrated antenna array for radar equipment enabling the simultaneous generation of two or more different radiation patterns. 4,328,500, Cl. 343-700.0MS.

Alinari, Carlo. Decompression gauge. 4,327,584, Cl. 73-300.000.

Allen, Charles C.: *See*—
Allen, Charles S.; Allen, Charles C.; and Lissau, Frederic, 4,327,891, Cl. 251-38.000.

Allen, Charles S.; Allen, Charles C.; and Lissau, Frederic, to Sloan Valve Company. Flush valve diaphragm having plastic insert. 4,327,891, Cl. 251-38.000.

Allen, Jay W.; and Granata, Peter J., to International Business Machines Corporation. Pulsed sine wave oscillating circuit arrangement. 4,328,525, Cl. 361-152.000.

Allied Corporation: *See*—
Chang, Irving B.; and Beckwith, Robert E., Jr., 4,328,147, Cl. 524-59.000.
Frankila, John W.; and Stephenson, Robert L., 4,327,882, Cl. 242-107.40A.
Patel, Gordhanbhai N.; and Baughman, Ray H., 4,328,259, Cl. 427-44.000.
Sachleben, Harold G., Sr.; and Lees, Robert, 4,327,872, Cl. 242-18.00A.

Allmacher, Daniel S., Jr. Torque-limiting drive coupling. 4,327,563, Cl. 464-37.000.

Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., to Bell Telephone Laboratories, Inc.; and Western Electric Company, Inc. Bonded sheath cable. 4,328,394, Cl. 174-106.00D.

Alshin, Richard A.: *See*—
Wyman, Ransome J.; Alshin, Richard A.; and Gilbert, Charles H., 4,327,793, Cl. 152-323.000.

Alt, Werner; Kretzschmar, Siegfried; and Wohler, Hans-Joachim, to Balcke-Durr Aktiengesellschaft. Apparatus for damping the noise in cooling towers. 4,328,176, Cl. 261-111.000.

Alter, Eduard; and Bruns, Ludwig, to EC Erdolchemie GmbH. Process for separating off olefins from gases containing olefins. 4,328,382, Cl. 585-844.000.

ALZA Corporation: *See*—
Cortese, Richard; and Theeuwes, Felix, 4,327,725, Cl. 128-260.000.

AM International, Inc.: *See*—
Goodwin, Eber L.; Borke, Thomas J.; and Armstrong, Joel D., 4,327,641, Cl. 101-144.000.

Amax Inc.: *See*—
Beckstead, Leo W.; and Huggins, Dale K., 4,328,190, Cl. 423-54.000.
Tsigdinos, George A.; Weber, Thomas R.; and Moore, Fred W., 4,328,152, Cl. 524-406.000.

American Admixtures and Chemicals Corporation: *See*—
Bobrowski, Gregory S.; and Connolly, James D., 4,328,145, Cl. 524-6.000.

American Brands, Inc.: *See*—
Glock, Eugene, 4,327,750, Cl. 131-292.000.

American Can Company: *See*—
Kuchenbecker, Morris W., 4,327,833, Cl. 206-621.000.
American Cast Iron Pipe Company: *See*—
McCauley, Edward D.; Farlow, James C.; and Adams, William T., Jr., 4,327,798, Cl. 164-56.100.
American Cyanamid Company: *See*—
Farewell, John P.; and Lipp, David W., 4,328,141, Cl. 524-272.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,328,358, Cl. 560-121.000.
Wissner, Allan, 4,328,359, Cl. 560-121.000.
American Home Products Corporation: *See*—
Sarantakis, Dimitrios, 4,328,135, Cl. 525-54.110.
American Standard Inc.: *See*—
Campbell, Richard D., 4,328,541, Cl. 340-146.200.
Nikolayczik, Hans, 4,327,771, Cl. 137-625.400.
AMF Incorporated: *See*—
Heeger, Stephen E., 4,328,539, Cl. 364-144.000.
Weiss, Arnold A., 4,327,579, Cl. 73-146.000.
Ammermann, Eberhard: *See*—
Zeeh, Bernd; Theobald, Hans; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,328,236, Cl. 424-272.000.
Amneus, John S.: *See*—
McKibben, Gary E.; and Amneus, John S., 4,327,782, Cl. 141-26.000.
AMP Incorporated: *See*—
Hughes, Donald W. K.; Myers, Ronald W.; and Weidler, Charles H., 4,327,958, Cl. 339-276.0SF.
Rix, Robert D., 4,327,485, Cl. 29-751.000.
Amstad, Christian: *See*—
Kovari, Kalman; Koppel, Jakob; and Amstad, Christian, 4,327,590, Cl. 73-784.000.
Anastas, Mark S.; and Vaughan, Russell F., to Boeing Company, The. Secure implementation of transition machine computer. 4,328,542, Cl. 364-200.000.
Ancona, John A.: *See*—
Hierholzer, Frank J., Jr.; Ancona, John A.; and Shelton, Gerald L., 4,328,529, Cl. 361-266.000.
Anders, Leon W.; and Weigel, David C., to Minnesota Mining and Manufacturing Co. Indicator material. 4,328,181, Cl. 422-56.000.
Anderson, Carl M., to Hesston Corporation. Overlapped folding beam implement. 4,327,932, Cl. 280-411.00A.
Anderson, Donald W.; and Ogier, Leonard J., to Marconi Company Limited, The. Radio direction finding systems. 4,328,499, Cl. 343-113.00R.
Anderson, Raymond P.; Schmalzer, David K.; and Wright, Charles H., to Pittsburg & Midway Coal Mining Co., The. Controlled short residence time coal liquefaction process. 4,328,088, Cl. 208-8.0LE.
Anderson, Richard D.: *See*—
Fauchier, Jess F., II; and Anderson, Richard D., 4,327,878, Cl. 242-67.30R.
Andreoni, Alessandro: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,328,240, Cl. 424-285.000.
Andrews, Robert E.: *See*—
Spence, Kemet D.; and Andrews, Robert E., 4,328,203, Cl. 424-16.000.
Andy, Robert. Method for improving characteristics of polymethylpentene through addition of coated mica particles. 4,328,146, Cl. 523-216.000.
Anezaki, Syoji: *See*—
Tozaki, Yasuyuki; Ueda, Minoru; Hirata, Takeyuki; and Anezaki, Syoji, 4,328,030, Cl. 75-60.000.
Angelica Corporation: *See*—
Carnaghi, Arturo A.; and Zins, Howard M., 4,327,447, Cl. 2-247.000.
Angevine, Philip J.; and Oleck, Stephen M., to Mobil Oil Corporation. Residua demetalation/desulfurization catalyst. 4,328,127, Cl. 252-439.000.
Ansted, Walter A. Emergency stabilizer for an impalement in the human body. 4,327,716, Cl. 128-133.000.
Anton, Frech. Funicular railway car cabin. 4,327,648, Cl. 105-150.000.
Antos, George J., to UOP Inc. Hydrocarbon isomerization catalyst and process. 4,328,385, Cl. 585-664.000.
Aoki, Bunya: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.
Aoki, Eiichiro, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument realizing automatic performance by memorized progression. 4,327,622, Cl. 84-1.030.
APECO Corporation: *See*—
Babicz, Thaddeus W., 4,327,992, Cl. 355-3.00R.
Apital Produzioni Industriali S.p.A.: *See*—
Raspanti, Giuseppe, 4,328,069, Cl. 162-162.000.
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, to Matsushita Electric Industrial Co., Ltd. Electronic parts mounting apparatus. 4,327,482, Cl. 29-740.000.
Arase, Kazuhide: *See*—
Tanaka, Toshiharu; Tsuda, Naoteru; and Arase, Kazuhide, 4,328,442, Cl. 310-326.000.
Arbuckle, William B., to Linde Aktiengesellschaft. Treatment of suspended solids—and adsorbable contaminant—containing liquid. 4,328,105, Cl. 210-663.000.
Archie Kidd Limited: *See*—
Currie, Ian; and McMaster, Tom, 4,327,543, Cl. 56-344.000.
Arman S.p.A.: *See*—
Maiocco, Guiseppe, 4,327,458, Cl. 15-250.320.
Armstrong, Joel D.: *See*—
Goodwin, Eber L.; Borke, Thomas J.; and Armstrong, Joel D., 4,327,641, Cl. 101-144.000.
Arrasmith, Clemens. Method and apparatus for coating composition on can seams. 4,327,665, Cl. 118-666.000.
Arrow International, Inc.: *See*—
Frankhouser, Paul L., 4,327,723, Cl. 128-214.400.
Arrowsmith, David R.; and Parsons, David, to Automotive Products Limited. Clutch release bearing assembly. 4,327,951, Cl. 308-184.00A.
Arya, Satya P., to Ingersoll-Rand Company. Offset driver accessory. 4,327,806, Cl. 173-131.000.
Asada, Kazuo: *See*—
Takeuchi, Osamu; Chiba, Satoshi; Komiya, Satoru; Komatsu, Satoshi; Asada, Kazuo; Tokashiki, Yuji; and Shimazaki, Hiroshi, 4,327,991, Cl. 355-3.0SH.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Horiguchi, Sadayuki; Hasegawa, Akio; and Sakamoto, Hajimu, 4,328,314, Cl. 435-212.000.
Asai, Kazuyoshi; Ishii, Yasunobu; and Kurumada, Katsuhiko, to Nippon Telegraph & Telephone Public Corporation. Method of manufacturing a FET device disposed in a compound s/c layer on a semi-insulating substrate. 4,327,475, Cl. 29-571.000.
Asai, Koichi; and Kawada, Tousuke, to Fuji Mfg. Co., Ltd. Apparatus for inserting electronic components to a printed circuit board. 4,327,484, Cl. 29-741.000.
Ascher, Raymond R., to Linx Building Systems Corp. Composite building panel. 4,327,536, Cl. 52-309.120.
Ashby, Gerald K.: *See*—
Gabby, John L.; Ashby, Gerald K.; Cameron, Dennis W.; and Theuer, Richard C., 4,328,217, Cl. 424-195.000.
Ashizawa, Takeshi; and Yasumura, Motoaki, to Kabushiki Kaisha Tanaka Seisakusho. Method of controlling an operation of a copy-cutting apparatus. 4,328,050, Cl. 148-9.00R.
Ashjian, Henry: *See*—
Horodysky, Andrew G.; Kaminski, Joan M.; Ashjian, Henry; and Gawel, Henry A., 4,328,113, Cl. 252-49.600.
Astarita, Domenico: *See*—
Senni, Paolo; Catoni, Mario; and Astarita, Domenico, 4,328,154, Cl. 260-239.30A.
Atalla, Martin M., to Atalla Technovations. Multilevel security apparatus and method. 4,328,414, Cl. 235-380.000.
Atalla Technovations: *See*—
Atalla, Martin M., 4,328,414, Cl. 235-380.000.
Atlantic Richfield Company: *See*—
Hansen, Gerald D., 4,328,180, Cl. 422-15.000.
Atsugi Motor Parts Co. Ltd: *See*—
Sekiguchi, Tomoyoshi, 4,327,936, Cl. 280-711.000.
Audi Nsu Auto Union Aktiengesellschaft: *See*—
Keitel, Rolf; Pagel, Ernst-Olav; and Drexler, Ludwig, 4,328,480, Cl. 340-60.000.
August Ruggeberg, Firma: *See*—
Strojny, Werner, 4,327,605, Cl. 76-25.00A.
Ausoria Farmaceutici S.r.l.: *See*—
De Vincentiis, Leonardo, 4,328,242, Cl. 424-301.000.
Austin Company, The: *See*—
Crow, William M.; and Yerbury, Michael J., 4,328,548, Cl. 364-449.000.
Autoclave Engineers, Inc.: *See*—
Ruyak, Robert F., 4,327,892, Cl. 251-65.000.
Automation Industries, Inc.: *See*—
Kutnyak, Thomas A., 4,328,392, Cl. 174-68.00C.
Automobiles Citroen and Automobiles Peugeot: *See*—
Lisse, Jean-Pierre, J., 4,328,293, Cl. 429-149.000.
Automotive Products Limited: *See*—
Arrowsmith, David R.; and Parsons, David, 4,327,951, Cl. 308-184.00A.
Avco Everett Research Laboratory, Inc.: *See*—
Zappa, Oswald L., 4,328,443, Cl. 313-420.000.
Avery, Cecil T., to Olin Corporation. Process flow computer control system. 4,328,549, Cl. 364-469.000.
Avins, Jeremiah Y., to RCA Corporation. Encoder for recording incremental changes. 4,328,463, Cl. 328-133.000.
Axen, Udo F.; and Sih, John C., to Upjohn Company, The. 2,5-Inter-o-phenylene-3,4-dinor-6,9α-epoxy-6β-PGF_1 amides. 4,328,338, Cl. 542-426.000.
B.H.F. (Engineering) Limited: *See*—
Vilk, Peter, 4,328,023, Cl. 65-328.000.
Babcock-Hitachi, Ltd.: *See*—
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shinpei; Nishimura, Tsukasa; and Nishimura, Yasuyuki, 4,328,195, Cl. 423-242.000.
Babicz, Thaddeus W., to APECO Corporation. Driving arrangement for photocopy machine. 4,327,992, Cl. 355-3.00R.
Babushkin, Jury V.: *See*—
Markhasin, Alexandr B.; Belyaev, Gennady V.; Babushkin, Jury V.; and Petrov, Alexandr K., 4,328,559, Cl. 364-900.000.
Bachmann Industries, Inc.: *See*—
Bachmann, Lothar; Powell, John A.; and Turner, Ralph W., 4,327,893, Cl. 251-159.000.
Bachmann, Lothar; Powell, John A.; and Turner, Ralph W., to Bachmann Industries, Inc. Guillotine damper. 4,327,893, Cl. 251-159.000.

Bachmann, Rudolf: *See*—
Lehner, August; Hartmann, Heinrich; Bachmann, Rudolf; Balz, Werner; and Kohl, Albert, 4,328,282, Cl. 428-425.900.
Backhaus, Hans-Gerd: *See*—
Scholz, Hansjurgen; Brambilla, Luigi; Backhaus, Hans-Gerd; and Korber, Jurgen, 4,327,937, Cl. 280-732.000.
Baghdady, Elie J. Method and apparatus for signal detection, separation and suppression. 4,328,591, Cl. 455-303.000.
Bagley, William L. Golf putting game. 4,327,917, Cl. 273-176.0FA.
Baillie, William R.: *See*—
Keyes, Richard M.; Schwitters, Stephen W.; and Baillie, William R., 4,327,845, Cl. 222-340.000.
Bainard, Dean R.: *See*—
Alexander, Ronald J.; and Bainard, Dean R., 4,327,925, Cl. 277-212.0FB.
Bajorek, Christopher H.; Chance, Dudley A.; Ho, Chung W.; and Thompson, David A., to International Business Machines Corporation. Multiple layer, ceramic carrier for high switching speed VLSI chips. 4,328,530, Cl. 361-308.000.
Bakuniak, Edmund: *See*—
Witek, Stanislaw; Grobelny, Damian; Gorska-Poczopko, Jadwiga; Bakuniak, Edmund; Bakuniak, Irena; and Ptaszkowska, Janina, 4,328,226, Cl. 424-248.400.
Bakuniak, Irena: *See*—
Witek, Stanislaw; Grobelny, Damian; Gorska-Poczopko, Jadwiga; Bakuniak, Edmund; Bakuniak, Irena; and Ptaszkowska, Janina, 4,328,226, Cl. 424-248.400.
Balcke-Durr Aktiengesellschaft: *See*—
Alt, Werner; Kretzschmar, Siegfried; and Wohler, Hans-Joachim, 4,328,176, Cl. 261-111.000.
Baldi, Luciano; Collecchia, Franco; and Messori, Vittorio, to Rumianca S.p.A. Process for the production of 2,6-dinitro-N-alkyl-anilines. 4,328,369, Cl. 564-406.000.
Baldwin, Harry L.; Bergschneider, Beryl D.; Chamoff, Martin E.; Miller, Irving L.; Piller, Don W.; Robinett, Max J.; and Thorson, Donald L., to International Business Machines Corporation. Electronic point-of-sale system using direct-access storage. 4,328,544, Cl. 364-405.000.
Balz, Werner: *See*—
Lehner, August; Hartmann, Heinrich; Bachmann, Rudolf; Balz, Werner; and Kohl, Albert, 4,328,282, Cl. 428-425.900.
Balzer & Droll: *See*—
Muller, Josef, 4,327,478, Cl. 29-596.000.
Banzhaf, Werner, to Robert Bosch GmbH. Apparatus and method for controlling the composition of the operational mixture in internal combustion engines. 4,327,683, Cl. 123-327.000.
Barbati, Stefano: *See*—
Alia, Francesco; and Barbati, Stefano, 4,328,500, Cl. 343-700.0MS.
Barbee, Robert B.; and Davis, Burns, to Eastman Kodak Company. Copolyesterethers. 4,328,333, Cl. 528-301.000.
Barge, Jean A., to Aciers et Outillage Peugeot. Device for controlling the electric drive motor of a window raiser in particular in an automobile vehicle. 4,328,451, Cl. 318-596.000.
Barker, Larry D.: *See*—
Murray, E. Donald; Barker, Larry D.; and Woodman, Brenda J., 4,328,252, Cl. 426-262.000.
Barko, Andrew J.: *See*—
Fitzgibbons, William O.; and Barko, Andrew J., 4,328,075, Cl. 203-37.000.
Barley, Steven D.; and Bright, Stephen K., to Xerox Corporation. Progressive disclosure copying machine console using common keys for copy number and function select operations. 4,327,994, Cl. 355-14.00R.
Barlow, Michael T., to British Petroleum Company Limited, The. Process for the production of ethanol and/or acetaldehyde in the presence of metal complex catalyst systems. 4,328,375, Cl. 568-487.000.
Barman, Alan W.; and Hartford, Thomas W., to Bendix Corporation, The. Failure system for internal combustion engine. 4,328,547, Cl. 364-431.090.
Barnes Engineering Company: *See*—
Falbel, Gerald, 4,328,421, Cl. 250-347.000.
Baroff, James H.: *See*—
Dickey, David C.; Korb, Barry R.; Baroff, James H.; and Raff, Samuel J., 4,327,500, Cl. 33-457.000.
Baron, Richard C., to Polaroid Corporation. Synthetic polymers by polyisocyanate polyaddition process. 4,328,322, Cl. 521-163.000.
Bartholic, David B., to Engelhard Minerals & Chemicals Corporation. Selective vaporization process. 4,328,091, Cl. 208-91.000.
BASF Aktiengesellschaft: *See*—
Buschmann, Ernst; Goetz, Norbert; Zeeh, Bernd; and Varwig, Juergen, 4,328,380, Cl. 570-191.000.
Hertel, Otto; Scharf, Emil; and Melzer, Jaroslav, 4,328,142, Cl. 523-417.000.
Horn, Dieter; Lueddecke, Erik; and Heuck, Claus C., 4,328,000, Cl. 23-230.00B.
Kilpper, Gerhard; Grimmer, Johannes; Tonne, Peter; Horn, Hans C.; and Hetzel, Eckhard, 4,328,339, Cl. 544-94.000.
Lehner, August; Hartmann, Heinrich; Bachmann, Rudolf; Balz, Werner; and Kohl, Albert, 4,328,282, Cl. 428-425.900.
Merger, Franz; and Nestler, Gerhard, 4,328,354, Cl. 560-25.000.
Ostertag, Werner; Bittler, Knut; and Bock, Gustav, 4,328,042, Cl. 106-308.00B.
Rentzea, Costin; Jung, Johann; Sauter, Hubert; Heilen, Gerd; and Zeeh, Bernd, 4,328,028, Cl. 71-76.000.
Schirmer, Ulrich, 4,328,165, Cl. 260-453.0RW.
Zeeh, Bernd; Theobald, Hans; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,328,236, Cl. 424-272.000.
BASF Wyandotte Corporation: *See*—
Chung, Rack H., 4,328,160, Cl. 260-378.000.
Chung, Rack H., 4,328,161, Cl. 260-378.000.
Bates, David J.: *See*—
Norris, Carroll B., Jr.; Silzars, Aris; and Bates, David J., 4,328,466, Cl. 330-308.000.
Battail, Gerard; and Mollat du Jourdin, Patrick, to Thomson-CSF. Binary decoding device. 4,328,582, Cl. 371-37.000.
Battelle Development Corporation: *See*—
Spence, Kemet D.; and Andrews, Robert E., 4,328,203, Cl. 424-16.000.
Batty, Cyril; and Cooper, John L., to Russell Hobbs Limited. Beverage maker. 4,327,632, Cl. 99-320.000.
Bauer, Werner R., to Robertsh. w Controls Company. Reversing valve construction and parts therefor and methods of making the same. 4,327,774, Cl. 137-625.660.
Baughman, Ray H.: *See*—
Patel, Gordhanbhai N.; and Baughman, Ray H., 4,328,259, Cl. 427-44.000.
Baur, Guenter; Kohlmueller, Hans; and Krueger, Hans, to Siemens Aktiengesellschaft. Display device for optically representing information and a method of operation. 4,327,970, Cl. 350-363.000.
Baus, Heinz G. Water-closet or bidet. 4,327,451, Cl. 4-420.200.
Baxter Travenol Laboratories, Inc.: *See*—
Berger, Arthur; and Simon, Robert L., 4,328,376, Cl. 568-682.600.
Kwong, Peter C.; and Laurin, Dean G., 4,327,726, Cl. 128-272.000.
Bayer Aktiengesellschaft: *See*—
Bonse, Gerhard; Blank, Heinz U.; and Kratzer, Hans, 4,328,340, Cl. 544-182.000.
Boshagen, Horst; Sitt, Rudiger; and Truscheit, Ernst, 4,328,233, Cl. 424-267.000.
Findeisen, Kurt; and Linker, Karl-Heinz, 4,328,351, Cl. 556-415.000.
Haas, Peter; Muller, Heinz; Seifert, Peter; Wagner, Kuno; Findeisen, Kurt; and Konig, Klaus, 4,328,321, Cl. 521-108.000.
Kabbe, Hans-Joachim; Mayer, Hildegard E.; Mayer, Annedore; Ziemann, Heinz; and Stoepel, Kurt, 4,328,223, Cl. 424-246.000.
Mues, Volker; and Behrenz, Wolfgang, 4,328,219, Cl. 424-200.000.
Panek, Peter; Woditsch, Peter; Bayer, Eckhard; and Stutgens, Heribert, 4,328,040, Cl. 106-300.000.
Schmidt, Manfred; Freitag, Dieter; Bottenbruch, Ludwig; Reinking, Klaus; Rohr, Harry; and Medem, Harald, 4,328,174, Cl. 260-930.000.
Thomas, Rudolf; Stetter, Jorg; Eue, Ludwig; and Schmidt, Robert R., 4,328,029, Cl. 71-92.000.
Wellner, Wolfgang; Botta, Artur; and Gruber, Hermann, 4,328,330, Cl. 528-45.000.
Bayer, Eckhard: *See*—
Panek, Peter; Woditsch, Peter; Bayer, Eckhard; and Stutgens, Heribert, 4,328,040, Cl. 106-300.000.
Baylis, Anthony B.: *See*—
Slinkard, William E.; and Baylis, Anthony B., 4,328,365, Cl. 562-512.200.
Bazuin, Johannes, to LeBlond Incorporated. Turret lathe. 4,327,612, Cl. 82-2.00R.
Bd. of Regents for the Okla. Agri. and Mech. Colleges Acting For & On Behalf of Oklahoma State University: *See*—
Whitcomb, Carl E., 4,328,025, Cl. 71-23.000.
Beach, David L.; and Zambelli, Adolfo, to Gulf Research & Development Company. Olefin polymerization catalyst. 4,328,123, Cl. 252-429.00B.
Beall, George H.; Hoda, Syed N.; and Waldron, Richard W., to Corning Glass Works. Polychromatic glasses and method. 4,328,299, Cl. 430-13.000.
Bean, Rufus C. Ripper tooth attachment for a back hoe. 4,327,509, Cl. 37-117.500.
Beard, Terry D. Apparatus and method for detecting crossmodulation distortion. 4,328,574, Cl. 369-54.000.
Beatrice Foods Co.: *See*—
Keyes, Richard M., Schwitters, Stephen W.; and Baillie, William R., 4,327,845, Cl. 222-340.000.
Beck, Arnold A.; and Ruof, Edgar J., to Goodyear Aerospace Corporation. Antiskid brake control for aircraft. 4,327,948, Cl. 303-96.000.
Becker, James R.; Cooper, Julius; and Kuriloff, Fredric M., to Ideal Toy Corporation. Electromechanical decision making board game. 4,327,920, Cl. 273-238.000.
Becker, Kunibert: *See*—
Kirchbrucher, Rudiger; and Becker, Kunibert, 4,327,946, Cl. 299-33.000.
Becker, Paul N.: *See*—
Bergman, Robert G.; Becker, Paul N.; and White, Mary A., 4,328,164, Cl. 260-439.0CY.
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Michel, Wolfgang; and Becker, Reinhold, 4,327,777, Cl. 138-118.100.
Beckman Instruments, Inc.: *See*—
Hansen, Paul L., 4,328,586, Cl. 375-36.000.
Neti, Radhakrishna M.; and Harman, John N., III, 4,328,082, Cl. 204-195.00G.
Beckstead, Leo W.; and Huggins, Dale K., to Amax Inc. Solvent extraction of tungsten from aqueous tungstate solutions. 4,328,190, Cl. 423-54.000.

Beckwith, Robert E., Jr.: *See*—
Chang, Irving B.; and Beckwith, Robert E., Jr., 4,328,147, Cl. 524-59.000.

Becton, Dickinson and Company: *See*—
Cronenberg, Richard A., 4,327,718, Cl. 128-205.120.

Beecham Group Limited: *See*—
Taylor, Charles J., 4,328,205, Cl. 424-52.000.

Beecham Inc.: *See*—
Green, Donald L., 4,328,110, Cl. 252-8.750.

Beermann, Paul: *See*—
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Begala, Michael W.: *See*—
DeSantis, Charles M.; Zannella, Albert H.; Begala, Michael W.; Wills, John R.; and Czerwinski, Watson P., 4,328,501, Cl. 343-749.000.

Behle, Gunter R., to ACF Industries, Incorporated. Bottom outlet valve open and closed indicator. 4,327,768, Cl. 137-553.000.

Behrenz, Wolfgang: *See*—
Mues, Volker; and Behrenz, Wolfgang, 4,328,219, Cl. 424-200.000.

Belcher, Paul E.; and Hobel, Daniel, to Consumer Electronic Products Corporation. Remote AC power control with control pulses at the zero crossing of the AC wave. 4,328,482, Cl. 340-310.00A.

Beldam, Richard P., to Borg-Warner Corporation. Multiple fluid heat exchanger. 4,327,802, Cl. 165-153.000.

Bell, Alfred J.; Polk, Albert S., Jr.; Cronvich, Lester; and Hardgrave, Everett J., Jr., to United States of America, Navy. Integral rocket ramjet missile. 4,327,886, Cl. 244-3.290.

Bell & Howell Company: *See*—
Call, Daniel D., 4,328,402, Cl. 200-61.410.

Bell, Robert R.; and Christians, Scott T., to Motorola Inc. Digital receiver/transceiver synchronization pulse detector for a multiplexing system. 4,328,578, Cl. 370-100.000.

Bell Telephone Laboratories, Inc.: *See*—
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,328,394, Cl. 174-106.00D.
Bloom, David M., 4,327,966, Cl. 350-162.00R.
Bush, Jeffrey L., 4,327,530, Cl. 52-66.000.
Ngo, Peter D. T., 4,328,489, Cl. 340-713.000.

Bellhouse, Brian J.; and Haworth, William S. Membrane apparatus having alternate opposite flow transverse to means flow. 4,328,102, Cl. 210-321.400.

Belyaev, Gennady V.: *See*—
Markhasin, Alexandr B.; Belyaev, Gennady V.; Babushkin, Jury V.; and Petrov, Alexandr K., 4,328,559, Cl. 364-900.000.

Bender, Robert. Methods of treating coal to remove sulfur and ash. 4,328,002, Cl. 44-1.0SR.

Bendix Corporation, The: *See*—
Barman, Alan W.; and Hartford, Thomas W., 4,328,547, Cl. 364-431.090.
Busser, Darryl W., 4,327,693, Cl. 123-490.000.
Rachel, Todd L., 4,327,689, Cl. 123-436.000.
Seelig, Frederick A.; and Coman, William E., 4,327,527, Cl. 51-416.000.

Bennett, Stuart C., to Coal Industry (Patents) Limited. Acoustic liner for attenuating noise. 4,327,816, Cl. 181-292.000.

Bennett, William G., to Teleflex Incorporated. Remote control (connector O-ring). 4,327,600, Cl. 74-501.00R.

Benson, Robert A., to Seapower, Inc. Filter apparatus. 4,328,098, Cl. 210-195.100.

Benthin, Frank: *See*—
Oetjen, Georg-Wilhelm; and Benthin, Frank, 4,327,717, Cl. 128-201.130.

Berenberg, John A.; Clabaugh, David M.; and Taylor, Ralph C., Jr., to Cincinnati Milacron Inc. Method for programmably controlling the sequence of execution of data blocks in a program. 4,328,448, Cl. 318-561.000.

Berger, Arthur; and Simon, Robert L., to Baxter Travenol Laboratories, Inc. Method of removing fluorinated olefin byproduct formed during the synthesis of a fluorinated ether. 4,328,376, Cl. 568-682.000.

Bergman, Robert G.; Becker, Paul N.; and White, Mary A., to University of California, The Regents of the. Cobalt alkylnitroso complexes and methods therewith. 4,328,164, Cl. 260-439.0CY.

Bergschneider, Beryl D.: *See*—
Baldwin, Harry L.; Bergschneider, Beryl D.; Chamoff, Martin E.; Miller, Irving L.; Piller, Don W.; Robinett, Max J.; and Thorson, Donald L., 4,328,544, Cl. 364-405.000.

Berkowitz, Ami E., to General Electric Company. High resolution magnetic printing head. 4,328,503, Cl. 346-74.500.

Bernier, Edgar R.: *See*—
Chesterton, Arthur W.; and Bernier, Edgar R., 4,327,923, Cl. 277-124.000.

Bernier, Raymond. Electromagnetic relay having two synchronized armatures. 4,328,476, Cl. 335-128.000.

Bernstein, Philip: *See*—
Ronn, Avigdor M.; Bernstein, Philip; Branch, Harvey C.; and Coffey, James P., 4,328,303, Cl. 430-290.000.

Berstein, Garri, to Wilhelm Hegenscheidt Gesellschaft mbH. Method for the cold rolling of parts. 4,327,568, Cl. 72-199.000.

Bertolacini, Ralph J.: *See*—
Udovich, Carl A.; and Bertolacini, Ralph J., 4,328,126, Cl. 252-435.000.

Bertschi, Ernst, to ICOMAG Trust Reg. Hair-curling implement. 4,327,753, Cl. 132-40.000.

Besenval, Christian: *See*—
Melan, Giuseppe; Verdet, Pierre; and Besenval, Christian, 4,328,015, Cl. 65-2.000.

Beta Engineering & Development Ltd.: *See*—
Porat, Chaim, 4,327,593, Cl. 73-862.680.
Simon, Avi, 4,327,596, Cl. 74-89.200.

Beuchat, Roger; Charmoy, Pierre-Alain; and Damond, Remy, to Mefina S.A. Device for transmitting signals to a fuse. 4,327,625, Cl. 89-6.000.

BFG Glassgroup: *See*—
Groth, Rolf, 4,327,967, Cl. 350-258.000.

Bianchetta, Donald L.; and Rhodes, Sammy J., to Caterpillar Tractor Co. Controlled pressure upstaging and flow reduction. 4,327,549, Cl. 60-426.000.

Biblarz, Oscar; and Gawain, Theodore H., to United States of America, Navy. Optimally loaded electrohydrodynamic power generator. 4,328,436, Cl. 310-11.000.

Biederman, Richard; and Zurawski, Ronald A., to Superpressure, Inc. Float valve assembly for a liquid drain trap. 4,327,764, Cl. 137-192.000.

Bigelow, Floyd E., Jr.; Bigelow, Floyd E., III; and Bigelow, William H. Prefabricated building. 4,327,529, Cl. 52-34.000.

Bigelow, Floyd E., III: *See*—
Bigelow, Floyd E., Jr.; Bigelow, Floyd E., III; and Bigelow, William H., 4,327,529, Cl. 52-34.000.

Bigelow, William H.: *See*—
Bigelow, Floyd E., Jr.; Bigelow, Floyd E., III; and Bigelow, William H., 4,327,529, Cl. 52-34.000.

Biggs, Candice B.: *See*—
Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., 4,328,315, Cl. 435-253.000.

Bilak, Richard C. Cat toilet assembly. 4,327,667, Cl. 119-1.000.

Bilen, Branislav: *See*—
Zrnic, Nenad; and Bilen, Branislav, 4,328,093, Cl. 209-3.000.

Bilhorn, John M., to Yardngy Electric Corporation. Electrode. 4,328,297, Cl. 429-222.000.

Binks Manufacturing Company: *See*—
Telchuk, Steve E., Jr.; Brown, Leslie H.; and Gerdes, Donald F., 4,328,012, Cl. 55-90.000.

Birk, Michael; and Pfeiffer, Ullrich. Pneumatically operable injection device. 4,327,724, Cl. 128-218.00A.

Bittler, Knut: *See*—
Ostertag, Werner; Bittler, Knut; and Bock, Gustav, 4,328,042, Cl. 106-308.00B.

Bittner, Friedrich; Heimberger, Werner; Henkel, Kurt; Kriebitzsch, Norbert; Petzold, Martin; and Puschner, Kurt, to Degussa Aktiengesellschaft. Process for the recovery of pure cyanogen chloride. 4,328,010, Cl. 55-51.000.

BJ-Hughes Inc.: *See*—
Briggs, Garry L., 4,328,038, Cl. 106-87.000.

Black Clawson Company, The: *See*—
Chupka, David E.; and Seifert, Peter, 4,328,096, Cl. 209-240.000.

Black & Decker Inc.: *See*—
Cuneo, Giuseppe, 4,328,405, Cl. 200-157.000.

Black, Philip W., to International Standard Electric Corporation. Single mode fibre and method of manufacture. 4,327,965, Cl. 350-96.330.

Blake, Graham J., to Albert Browne Limited. Sterilization indicators containing amino acid(s) and pH indicator. 4,328,182, Cl. 422-56.000.

Blanchaud, Maurice; and Bournier, Edgar. Mushroom with edible colloidal substance. 4,328,251, Cl. 426-262.000.

Blank, Heinz U.: *See*—
Bonse, Gerhard; Blank, Heinz U.; and Kratzer, Hans, 4,328,340, Cl. 544-182.000.

Blasbalg, Morton. Multiple bird feeder. 4,327,669, Cl. 119-51.00R.

Blessing, Hubert, to Levi Strauss & Co. Continuous sewer. 4,327,653, Cl. 112-121.140.

Blevins, Ralph W.; Keirsey, James L.; and Shippen, William B., to United States of America, Navy. Thrust augmented rocket. 4,327,885, Cl. 244-3.240.

Bloom, David M., to Bell Telephone Laboratories, Incorporated. Variable attenuator for laser radiation. 4,327,966, Cl. 350-162.00R.

Blount, David H. Process for the production of cellulose-silicate products. 4,328,136, Cl. 523-204.000.

Blumenkranz, James J.; and Hall, Rowland G., to R & G Sloane Manufacturing Co. Ball valve. 4,327,895, Cl. 251-315.000.

Board of Regents, The University of Texas System: *See*—
Finkelstein, Richard A.; and Honda, Takeshi, 4,328,209, Cl. 424-92.000.

Bobak, Tadeusz; and Bobak, Tadeusz C. Automatic display system and process. 4,328,492, Cl. 340-764.000.

Bobak, Tadeusz C.: *See*—
Bobak, Tadeusz; and Bobak, Tadeusz C., 4,328,492, Cl. 340-764.000.

Boberski, William G.; Nowakowski, Peter M.; and Seiner, Jerome A., to PPG Industries, Inc. Curable silicate composition containing metal condensed phosphate hardener coated with reaction product from a metal aluminate and/or a metal borate. 4,328,033, Cl. 106-74.000.

Bobrowski, Gregory S.; and Connolly, James D., to American Admixtures and Chemicals Corporation. Additive for air-entrained super plasticized concrete, concrete produced thereby and method of producing air-entrained super plasticized concrete. 4,328,145, Cl. 524-6.000.

Bock, George E. Baseball game apparatus. 4,327,913, Cl. 273-89.000.

Bock, Gustav: *See*—
Ostertag, Werner; Bittler, Knut; and Bock, Gustav, 4,328,042, Cl. 106-308.00B.

Boeckel, John W., to Du Pont de Nemours, E. I., and Company. Chamber block having a supernatant collection receptacle therein. 4,327,661, Cl. 118-52.000.

Boehringer Ingelheim GmbH: *See—*
Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Seeger, Ernst; Engelhardt, Gunther; and Zimmermann, Rainer, 4,328,235, Cl. 424-270.000.

Boehringer Mannheim Corporation: *See—*
Reasons, Robert; and Albright, Bill E., 4,328,185, Cl. 422-82.000.

Boeing Company, The: *See—*
Anastas, Mark S.; and Vaughan, Russell F., 4,328,542, Cl. 364-200.000.
Gupta, Alankar, 4,327,864, Cl. 236-86.000.

Boger, Manfred; and Drabek, Jozef, to Ciba-Geigy Corporation. Isothiourea derivatives having pesticidal activity. 4,328,248, Cl. 424-326.000.

Boger, Manfred: *See—*
Drabek, Jozef; and Boger, Manfred, 4,328,247, Cl. 424-326.000.

Bogren, Robert G.: *See—*
Cournoyer, Bernard T.; Bogren, Robert G.; and Wright, David M., 4,327,952, Cl. 312-184.000.

Bond, Paul A., to General Electric Company. Smooth series parallel transition for dual winding traction alternator. 4,328,427, Cl. 290-3.000.

Bonfield, Peter L.: *See—*
Slagel, Gary A.; and Bonfield, Peter L., 4,327,953, Cl. 339-17.0CF.

Bonk, John A.; and Malmendier, Joseph W., to Corning Glass Works. Composite article and method of sealing. 4,328,022, Cl. 65-43.000.

Bonse, Gerhard; Blank, Heinz U.; and Kratzer, Hans, to Bayer Aktiengesellschaft. Preparation of 4-amino-6-tert.-butyl-3-alkylthio-1,2,4-triazin-5-(4H)-ones. 4,328,340, Cl. 544-182.000.

Borel, Denis, to SRO Kugellagerwerke J. Schmid-Roost AG. Axial-rotary ball-bearing guide element. 4,327,949, Cl. 308-6.00C.

Borg-Warner Corporation: *See—*
Beldam, Richard P., 4,327,802, Cl. 165-153.000.
Vogele, Richard; and Lanzerath, Gunter, 4,327,822, Cl. 192-41.00A.

Borke, Thomas J.: *See—*
Goodwin, Eber L.; Borke, Thomas J.; and Armstrong, Joel D., 4,327,641, Cl. 101-144.000.

Borovik, Roman V.: *See—*
Kurbanov, Ildus A.; Jusupov, Rasikh K.; Borovik, Roman V.; Gabdulkhaev, Talgat G.; and Kurbanova, Ilmira A., 4,328,208, Cl. 424-88.000.

Borvendeg, Janos: *See—*
Szilagyi nee Farago, Katalin; Solyom, Sandor; Toldy, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,328,221, Cl. 424-241.000.

Bos, Wouter A., to Reba B.V. Gear case for a suction cutter dredger. 4,327,506, Cl. 37-65.000.

Boshagen, Horst; Sitt, Rudiger; and Trusheit, Ernst, to Bayer Aktiengesellschaft. α-Glucosidase inhibiting 2-hydroxymethyl-3,4,5-trihydroxy-piperidines. 4,328,233, Cl. 424-267.000.

Boswell, David B.: *See—*
Goodman, James P.; and Boswell, David B., 4,328,474, Cl. 333-176.000.

Botta, Artur: *See—*
Wellner, Wolfgang; Botta, Artur; and Gruber, Hermann, 4,328,330, Cl. 528-45.000.

Bottenbruch, Ludwig: *See—*
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Bournier, Edgar: *See—*
Blanchaud, Maurice; and Bournier, Edgar, 4,328,251, Cl. 426-262.000.

Bourque, George O. Crossarm yard sign support. 4,327,514, Cl. 40-607.000.

Bower, Arnold B., Jr., to General Electric Company. Keeper spring for connecting mining tool to work tool holder. 4,327,947, Cl. 299-86.000.

Bowers, James H.: *See—*
Carson, John C., Jr.; and Bowers, James H., 4,328,131, Cl. 252-542.000.

Bowers, Lynn R.: *See—*
Jones, William E.; and Bowers, Lynn R., 4,327,867, Cl. 239-214.230.

Boybay, Mustafa: *See—*
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Bragagnolo, Julio: *See—*
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Brambilla, Luigi: *See—*
Scholz, Hansjurgen; Brambilla, Luigi; Backhaus, Hans-Gerd; and Korber, Jurgen, 4,327,937, Cl. 280-732.000.

Branch, Harvey C.: *See—*
Ronn, Avigdor M.; Bernstein, Philip; Branch, Harvey C.; and Coffey, James P., 4,328,303, Cl. 430-290.000.

Brand, Gunter: *See—*
Adler, Karl-Heinz; Fritz, Adolf; Brand, Gunter; and Kielbas, Eugen, 4,328,439, Cl. 310-70.00R.

Braner Enterprises: *See—*
Greinke, James; Matsunaga, Douglas; and Mosquera, Eric W., 4,327,620, Cl. 83-479.000.

Brassine, Robert L. Humidifier. 4,327,630, Cl. 98-105.000.

Brauch, Robert B.: *See—*
Odermann, Charles R.; Brauch, Robert B.; and Minalga, Philip F., 4,327,654, Cl. 112-158.00E.

Braun, Aktiengesellschaft: *See—*
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Brawn, Ronald J.: *See—*
Groshong, LeRoy E.; and Brawn, Ronald J., 4,327,722, Cl. 128-214.400.

Bredeweg, Roger L., to Leco Corporation. Crucible assembly. 4,328,386, Cl. 373-118.000.

Brenner, L. Martin, to Smith Kline Corporation. Dopaminergic benzazepines. 4,328,153, Cl. 260-239.0BB.

Brent, Albert: *See—*
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,328,006, Cl. 48-62.00R.
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,328,008, Cl. 48-197.00R.

Brickman, Norman F.; and McDonald, Earl J., to International Business Machines Corporation. Control architecture for a communications controller. 4,328,543, Cl. 364-200.000.

Bricko, Thomas K.; and Kallevig, Jeffrey B., to Toro Company, The. Control system for power equipment. 4,327,539, Cl. 56-113.000.

Bridgestone Tire Company Limited: *See—*
Ogawa, Masaki; Hirata, Yasushi; and Ikegami, Mikihiko, 4,328,133, Cl. 524-505.000.
Suzuki, Kouji; and Takata, Takanori, 4,327,580, Cl. 73-146.000.

Briggs, Garry L., to BJ-Hughes Inc. Resin coated aluminum. 4,328,038, Cl. 106-87.000.

Bright, Stephen K.: *See—*
Barley, Steven D.; and Bright, Stephen K., 4,327,994, Cl. 355-14.00R.

British Petroleum Company Limited, The: *See—*
Barlow, Michael T., 4,328,375, Cl. 568-487.000.

Brockway, George S., II: *See—*
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,328,394, Cl. 174-106.00D.

Broden, Carl V. Device for separating particulate matter from a fluid. 4,328,101, Cl. 210-320.000.

Brois, Stanley J.: *See—*
Ryer, Jack; Brois, Stanley J.; and Nostrand, Elbert D., 4,328,003, Cl. 44-53.000.

Bromley, Eric, to Coleco Industries, Inc. Display panel for an electronic game and method of employing same. 4,327,915, Cl. 273-94.000.

Bronson, Paul A.; and Wallace, Patrick A. Esophageal-endotracheal airway. 4,327,720, Cl. 128-207.150.

Brown, Leslie H.: *See—*
Telchuk, Steve E., Jr.; Brown, Leslie H.; and Gerdes, Donald F., 4,328,012, Cl. 55-90.000.

Brown, Peter W.; DuBois, Chester G.; Hartke, David J.; and Hunt, Paul R., to Outboard Marine Corporation. Quick disconnect fluid line coupling. 4,327,770, Cl. 137-614.050.

Brown, Roger C.; Cairns, Hugh; and Payne, Anthony R., to Fisons Limited. N-Substituted-quinolin-4-one-2-carboxic acid derivatives. 4,328,230, Cl. 424-256.000.

Brownell, David A. Wood cutter. 4,327,487, Cl. 30-128.000.

BRS, Inc.: *See—*
Johnson, Jeffrey O., 4,327,503, Cl. 36-32.00R.
Pitman, F. Judson; and Chouinard, Richard J., 4,327,572, Cl. 73-7.000.

Bruenner, Ursula: *See—*
Yu, Cheng-Der; and Bruenner, Ursula, 4,328,245, Cl. 424-305.000.

Brunner, Rudolf: *See—*
Vanhorebeek, Remi; Geyken, Erwin; Mayer, Peter; Schausberger, Helmut; and Brunner, Rudolf, 4,327,988, Cl. 354-320.000.

Bruno, Gerald R., to Progressive Machine Company, Inc. Spring loaded core adaptor. 4,327,874, Cl. 242-46.200.

Bruns, Ludwig: *See—*
Alter, Eduard; and Bruns, Ludwig, 4,328,382, Cl. 585-844.000.

Brunsting, Albert, to Coulter Electronics, Inc. Redirecting surface for desired intensity profile. 4,327,972, Cl. 350-437.000.

Bruttel, Beat: *See—*
Abel, Heinz; Bruttel, Beat; and Buhler, Arthur, 4,328,220, Cl. 424-226.000.

Buda, Paul R.: *See—*
Zumpini, Joseph J.; Buda, Paul R.; and Prada, Luis E., 4,327,556, Cl. 62-153.000.

Budzich, Mieczyslaw; and Fitz, Forest G., Jr., to Nassau Recycle Corporation. Coil removal apparatus. 4,327,617, Cl. 83-419.000.

Budzich, Tadeusz. Load responsive fluid control valve. 4,327,627, Cl. 91-446.000.

Budzich, Tadeusz. Dual control input flow control valve. 4,327,763, Cl. 137-117.000.

Bue, Richard C., to Sico Incorporated. Support structure for mobile folding stage. 4,327,650, Cl. 108-113.000.

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Kraeling, John B., Jr.; Mann, Alexander B.; and Bukowski, Ronald G., 4,328,103, Cl. 210-411.000.
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Resch, Alois R., 4,327,609, Cl. 81-9.510.
Buren, Lawrence L.; and Large, George B., to Stauffer Chemical Company. Di-triethylamine salt of N,N'-bis-carboethoxymethyl-N,N'-bis-phosphonomethylurea and its use as a plant growth regulator. 4,328,027, Cl. 71-86.000.
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Burnham, Robert D.: *See*—
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Burnstein, Philip J.; and Seyler, Gerard, to Pittway Corporation. Electric horn with improved striker assembly. 4,328,486, Cl. 340-388.000.
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Aldridge, Lionel D.; and Trank, Robert, 4,327,954, Cl. 339-64.00M.
Burroughs Wellcome Co.: *See*—
Thorogood, Peter B., 4,328,234, Cl. 424-265.000.
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Horlbeck, Gernot; and Burzin, Klaus, 4,328,059, Cl. 156-332.000.
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C. A. Greiner & Sohne GmbH & Co. KG: *See*—
Feaster, William W., 4,327,746, Cl. 128-764.000.
C.T.M.: *See*—
Nozick, Jacques E., 4,328,524, Cl. 361-119.000.
Cairns, Hugh: *See*—
Brown, Roger C.; Cairns, Hugh; and Payne, Anthony R., 4,328,230, Cl. 424-256.000.
Calgon Corporation: *See*—
Morse, Lewis D.; and Dixon, Kenneth W., 4,328,149, Cl. 524-458.000.
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Gabby, John L.; Ashby, Gerald K.; Cameron, Dennis W.; and Theuer, Richard C., 4,328,217, Cl. 424-195.000.
Campbell, Richard D., to American Standard Inc. Fail-safe digital comparator. 4,328,541, Cl. 340-146.200.
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Kyogoku, Hiroshi, 4,328,507, Cl. 346-139.00R.
Matsuo, Takehiko; and Masuda, Ken, 4,328,267, Cl. 427-345.000.
Minoura, Kazuo; Kiyohara, Takehiko; and Saito, Jun, 4,327,959, Cl. 350-6.300.
Ohkawa, Yasuhiro; and Saito, Takashi, 4,327,664, Cl. 118-661.000.
Suzuki, Ryoichi; and Uchiyama, Takashi, 4,328,456, Cl. 320-7.000.
Urushihara, Kazunobu; and Uchidoi, Masanori, 4,327,985, Cl. 354-289.000.
Yamamichi, Masayoshi; Suzuki, Masayuki; Murakami, Hiroyasu; and Ito, Tadashi, 4,327,982, Cl. 354-156.000.
Capshew, Charles E., to Phillips Petroleum Company. Polymerization catalyst and process. 4,328,121, Cl. 252-429.00B.
Carbaugh, John E.: *See*—
Welch, Cletus N.; Loehr, Clifford E.; Crawford, Roger A.; and Carbaugh, John E., 4,328,200, Cl. 423-474.000.
Carey, Richard D., to Dayco Corporation. Apparatus for marking an elongate article. 4,327,636, Cl. 101-29.000.
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Hughes, Eric; Carlisle, Denis R.; and Holmes, Neville R., 4,327,547, Cl. 60-39.46P.
Carlson, Gene D.: *See*—
Ehrhardt, Gerry H.; and Carlson, Gene D., 4,327,939, Cl. 282-27.500.
Carmel Energy, Inc.: *See*—
Poston, Robert S., 4,327,805, Cl. 166-272.000.
Carnaghi, Arturo A.; and Zins, Howard M., to Angelica Corporation. Lined pocket with stitch-free upper outer part. 4,327,447, Cl. 2-247.000.
Carr, John M., to Eastern Specialty Company, The. Meter test switch. 4,328,401, Cl. 200-11.00R.
Carrier Corporation: *See*—
Jensen, Richard C., 4,328,462, Cl. 324-229.000.
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Van den Broek, Philippe; Gaudu, Rene; and Carrier, Paul, 4,328,479, Cl. 340-58.000.
Carson, John C., Jr.; and Bowers, James H., to Colgate-Palmolive Company. Elastic detergent bar of improved elevated temperature stability. 4,328,131, Cl. 252-542.000.
Carter, Rhonda. Mobile camera support. 4,327,986, Cl. 354-293.000.
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Ulrich, Gebert; Thorwart, Werner; Komarek, Jaromir; Cartheuser, Carl; Popendiker, Kurt; and Greve, Heinz-Gunther, 4,328,227, Cl. 424-250.000.
Caruccio, Frank T.; and Caruccio, Gwendelyn G. Method of determining weathering characteristics of rock formations in earth moving operations. 4,328,001, Cl. 23-230.0EP.
Caruccio, Gwendelyn G.: *See*—
Caruccio, Frank T.; and Caruccio, Gwendelyn G., 4,328,001, Cl. 23-230.0EP.
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Case, Jerry R., to International Business Machines Corporation. Dynamically switchable logic block for JK/EOR functions. 4,328,435, Cl. 307-466.000.
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Catanese, Salvatore S.; and Marchetti, Carmine A. Adjustable sleeve flex wrench. 4,327,611, Cl. 81-177.900.
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Bianchetta, Donald L.; and Rhodes, Sammy J., 4,327,549, Cl. 60-426.000.
Dauwalder, Fred R., 4,327,680, Cl. 123-195.00C.
Friede, Patrick W., 4,327,599, Cl. 74-483.00R.
Henson, Ralph B.; and Martin, James L., 4,327,694, Cl. 123-500.000.
Miller, Kenneth J., 4,327,800, Cl. 165-79.000.
Reinsma, Harold L.; and Clark, Ernest B., III, 4,327,921, Cl. 277-3.000.
Richardson, Richard W., 4,328,049, Cl. 148-9.00R.
Catoni, Mario: *See*—
Senni, Paolo; Catoni, Mario; and Astarita, Domenico, 4,328,154, Cl. 260-239.30A.
Cattano, John D., to Mac Engineering. Battery strap and post cast-on multi use mold. 4,327,890, Cl. 249-110.000.
Cavalier, Jean-Claude: *See*—
Chornet, Esteban; and Cavalier, Jean-Claude, 4,328,089, Cl. 208-8.00R.
Cavalleri, Bruno; Pagani, Hermes; and Volpe, Giancarlo, to Gruppo Lepetit S.p.A. Biologically pure culture of actinoplanes capable of producing antibiotic A/16686. 4,328,316, Cl. 435-253.000.
Cavanaugh, Walter B. Die stripping apparatus. 4,327,571, Cl. 72-344.000.
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Celanese Corporation: *See*—
Slinkard, William E.; and Baylis, Anthony B., 4,328,365, Cl. 562-512.200.
Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag": *See*—
Jedo, Antoni; and Jachna, Waclaw, 4,327,827, Cl. 198-771.000.
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Ceserani, Roberto: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,328,240, Cl. 424-285.000.
Chaggaris, Elias G., to Conergy Associates. Heating system and control. 4,328,407, Cl. 219-508.000.
Chalmers, William P. Motorcycle fork structure. 4,327,928, Cl. 280-277.000.
Chalmers, William T.; Kutney, James P.; Salisbury, Phillip J.; Stuart, Kenneth L.; Townsley, Phillip M.; and Worth, Brian R., to United States of America, Health & Human Services. Method for producing tripdiolide, triptolide and celastrol. 4,328,309, Cl. 435-126.000.
Chamberlin, David B., to Dictaphone Corporation. Method and apparatus for controlling predetermined machine conditions, such as the operating conditions of a dictation/transcription machine. 4,328,397, Cl. 179-6.090.
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Baldwin, Harry L.; Bergschneider, Beryl D.; Chamoff, Martin E.; Miller, Irving L.; Piller, Don W.; Robinett, Max J.; and Thorson, Donald L., 4,328,544, Cl. 364-405.000.
Champion International Corporation: *See*—
Thompson, Kenneth P., 4,327,861, Cl. 229-17.00G.

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Bajorek, Christopher H.; Chance, Dudley A.; Ho, Chung W.; and Thompson, David A., 4,328,530, Cl. 361-308.000.
Chang, Irving B.; and Beckwith, Robert E., Jr., to Allied Corporation. Roofing asphalt formulation. 4,328,147, Cl. 524-59.000.
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Beuchat, Roger; Charmoy, Pierre-Alain; and Damond, Remy, 4,327,625, Cl. 89-6.000.
Charnley, John, to Charnley Surgical Inventions Limited. Acetabular prosthesis. 4,327,449, Cl. 3-1.912.
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Charnley, John, 4,327,449, Cl. 3-1.912.
Chasteen, Jack W., to University of Dayton. Method for cleaning metal parts. 4,328,044, Cl. 134-2.000.
Chatterjee, Pallab K.: *See*—
Tasch, Al F., Jr.; Taylor, Geoff W.; and Chatterjee, Pallab K., 4,328,511, Cl. 357-41.000.
Chaudry, Imtiaz A.: *See*—
Ecker, Varda; Shah, Yogendra M.; and Chaudry, Imtiaz A., 4,328,213, Cl. 424-173.000.
Cheal, James, to Southwest Microwave, Inc. Intrusion detector system. 4,328,487, Cl. 340-554.000.
Chemische Werke Huels, A.G.: *See*—
Hanssle, Peter, 4,328,163, Cl. 260-439.00R.
Horlbeck, Gernot; and Burzin, Klaus, 4,328,059, Cl. 156-332.000.
Chen, Augustin T.; Nelb, Robert G., II; and Onder, Kemal B., to Upjohn Company, The. Novel polyester-amides. 4,328,331, Cl. 528-288.000.
Chen, Sow-Mei L.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,328,358, Cl. 560-121.000.
Cheng, Paul J.; and Mills, King L., to Phillips Petroleum Company. Method for producing carbon black. 4,328,199, Cl. 423-450.000.
Chesterton, Arthur W.; and Bernier, Edgar R., to A. W. Chesterton Company. Packing. 4,327,923, Cl. 277-124.000.
Chevron Research Company: *See*—
Kyan, Chwan P., 4,328,130, Cl. 252-477.00R.
Chiarenza, Angelo. Open end ratchet wrench. 4,327,610, Cl. 81-64.000.
Chiba, Satoshi: *See*—
Takeuchi, Osamu; Chiba, Satoshi; Komiya, Satoru; Komatsu, Satoshi; Asada, Kazuo; Tokashiki, Yuji; and Shimazaki, Hiroshi, 4,327,991, Cl. 355-3.0SH.
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Child, Edward T.: *See*—
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Childers, Irene J. Nose filter. 4,327,719, Cl. 128-206.110.
Chloride, Incorporated: *See*—
O'Connor, Dennis R., 4,328,424, Cl. 250-384.000.
Chmiel, Horst; and Mauser, Rudolf. Noninvasive measurement of blood flow rate utilizing ultrasound. 4,327,739, Cl. 128-663.000.
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Pitman, F. Judson; and Chouinard, Richard J., 4,327,572, Cl. 73-7.000.
Christians, Scott T.: *See*—
Bell, Robert R.; and Christians, Scott T., 4,328,578, Cl. 370-100.000.
Chubb Panorama Limited: *See*—
Feathers, Leonard J., 4,327,851, Cl. 224-211.000.
Chugai Seiyaku Kabushiki Kaisha: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.
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Chung, Rack H.; and Kray, William D., to General Electric Company. Silane-functionalized ultraviolet screen precursors. 4,328,346, Cl. 548-110.000.
Chupka, David E.; and Seifert, Peter, to Black Clawson Company, The. Dual flow screening apparatus. 4,328,096, Cl. 209-240.000.
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Wright, Peter J., 4,328,301, Cl. 430-215.000.
Ciba-Geigy Corporation: *See*—
Abel, Heinz; Bruttel, Beat; and Buhler, Arthur, 4,328,220, Cl. 424-226.000.
Adam, Jean-Marie, 4,328,159, Cl. 260-374.000.
Boger, Manfred; and Drabek, Jozef, 4,328,248, Cl. 424-326.000.
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Koller, Stefan; Eugster, Peter; and Agarwal, Suresh C., 4,327,999, Cl. 8-526.000.
Rink, Hans; Sieber, Peter; and Kamber, Bruno, 4,328,214, Cl. 424-177.000.
Cincinnati Milacron Inc.: *See*—
Berenberg, John A.; Clabaugh, David M.; and Taylor, Ralph C., Jr., 4,328,448, Cl. 318-561.000.
Citizen Watch Company Limited: *See*—
Kawahara, Hisashi, 4,328,572, Cl. 368-204.000.
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Clabaugh, David M.: *See*—
Berenberg, John A.; Clabaugh, David M.; and Taylor, Ralph C., Jr., 4,328,448, Cl. 318-561.000.
Clairol Incorporated: *See*—
Evans, Evelyn, 4,327,751, Cl. 132-7.000.
Clark, Alfred J., to Motorola Inc. Tuning core apparatus. 4,328,475, Cl. 334-7.000.
Clark, Ernest B., III: *See*—
Reinsma, Harold L.; and Clark, Ernest B., III, 4,327,921, Cl. 277-3.000.
Clark, Michael G.: *See*—
Shanks, Ian A.; Clark, Michael G.; and Leslie, Frank M., 4,328,493, Cl. 340-784.000.
Clark, William R.: *See*—
Ewing, James H.; and Clark, William R., 4,327,894, Cl. 251-233.000.
Clarke, Clarence C.; Paddock, Stephen W.; and Knoop, Donald E., to Whirlpool Corporation. Adaptive defrost control system. 4,327,557, Cl. 62-153.000.
Clement, Philippe; and Rossi, Jean-Paul, to Societe Industrielle Lesaffre. Active dried bakers' yeast. 4,328,250, Cl. 426-18.000.
Coal Industry (Patents) Limited: *See*—
Bennett, Stuart C., 4,327,816, Cl. 181-292.000.
Coburn Optical Industries, Inc.: *See*—
Tusinski, Joseph; Hill, Phillip D.; and Lund, Clarence J., 4,328,060, Cl. 156-344.000.
Coffey, James P.: *See*—
Ronn, Avigdor M.; Bernstein, Philip; Branch, Harvey C.; and Coffey, James P., 4,328,303, Cl. 430-290.000.
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Nicholson, Raymond W., 4,327,824, Cl. 194-9.00R.
Coleco Industries, Inc.: *See*—
Bromley, Eric, 4,327,915, Cl. 273-94.000.
Coleman, John H., to Plasma Physics Corp. Method of forming semiconducting materials and barriers. 4,328,258, Cl. 427-39.000.
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Carson, John C., Jr.; and Bowers, James H., 4,328,131, Cl. 252-542.000.
Collecchia, Franco: *See*—
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Collins, Paul W.; and Pappo, Raphael, to G. D. Searle & Co. Prostaglandin derivatives having aryl, hydroxyl, and alkynyl functions in one side chain. 4,328,355, Cl. 560-53.000.
Collins, Stephen. Splicing apparatus. 4,328,054, Cl. 156-159.000.
Colmon, Daniel; and Triffaux, Francis, to Saint-Gobain Vitrage. Apparatus for assembling sheets of glass and/or plastic materials. 4,327,634, Cl. 100-155.00G.
Colpack, Michael J.; Pasko, Edward; and Johnson, Richard W., to United States of America, Army. Integral test input for electro-optically multiplexed FLIR system. 4,328,516, Cl. 358-113.000.
Coltman, Stephen C. W.: *See*—
Raphael, Richard A.; Eyley, Stephen C.; and Coltman, Stephen C. W., 4,328,341, Cl. 546-92.000.
Colvette, Douglas: *See*—
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Combustion Engineering, Inc.: *See*—
Pettyjohn, William H.; Lewis, John T.; and Milligan, William E., deceased, 4,327,526, Cl. 51-245.000.
Commissariat a l'Energie Atomique: *See*—
Abbes, Claude; De Villepoix, Raymond; and Rouaud, Christian, 4,327,942, Cl. 285-39.000.
Moulin, Maurice, 4,328,071, Cl. 376-245.000.
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Manin, Michel G., 4,327,813, Cl. 181-120.000.
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Fredriksen, Thorbjoern R.; and Villers, Philippe, 4,328,553, Cl. 364-559.000.
Condor International Corporation: *See*—
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Conley, Richard A.; Lam, Margaret M.; and High, Leroy B., to E. R. Squibb & Sons, Inc. Intermediate quinolin-4-ones. 4,328,342, Cl. 546-153.000.
Connolly, James D.: *See*—
Bobrowski, Gregory S.; and Connolly, James D., 4,328,145, Cl. 524-6.000.
Connolly, Peter, to Red Devil Inc. Hand held glass cutter. 4,327,488, Cl. 30-164.950.
Conrad, Jeff, to Pillsbury Company, The. Dough cutter with interchangeable cutting elements. 4,327,489, Cl. 30-299.000.
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Damrau, Wayne A., 4,327,662, Cl. 118-410.000.
Consumer Electronic Products Corporation: *See*—
Belcher, Paul E.; and Hobel, Daniel, 4,328,482, Cl. 340-310.00A.
Conti, John A.: *See*—
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Continental Group, Inc., The: *See*—
Walter, John, 4,327,842, Cl. 220-367.000.
Continental Group of Canada Ltd., The: *See*—
Hughes, Robert G., 4,327,829, Cl. 206-193.000.

Waldburger, Peter, 4,328,254, Cl. 426-393.000.

Contraves Italiana S.p.A.: *See—*
Alia, Francesco; and Barbati, Stefano, 4,328,500, Cl. 343-700.0MS.

Convis, Danny B.; Glickman, David; and Rosenbaum, Walter S., to International Business Machines Corp. Alpha content match prescan method for automatic spelling error correction. 4,328,561, Cl. 364-900.000.

Cook, John N.: *See—*
Burke, James W.; and Cook, John N., 4,327,766, Cl. 137-343.000.

Cooke, John E. Clip-on book end. 4,327,838, Cl. 211-184.000.

Cooke, Rodney D.: *See—*
Freytag, Arthur H.; and Cooke, Rodney D., 4,328,043, Cl. 127-44.000.

Cookson, Alan H., to United States of America, Energy. Gas insulated transmission line having tapered particle trapping ring. 4,328,391, Cl. 174-14.00R.

Cooper, James J., Jr.; Reinhardt, William C.; and Hornung, Elmer H., to International Telephone and Telegraph Corporation. Electrical terminal lug. 4,327,957, Cl. 339-272.00R.

Cooper, John L.: *See—*
Batty, Cyril; and Cooper, John L., 4,327,632, Cl. 99-320.000.

Cooper, Julius; and Ensmann, Burt W., to Ideal Toy Corporation. Wandering drone car. 4,327,519, Cl. 46-262.000.

Cooper, Julius: *See—*
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Corda, Francesco: *See—*
Piccardi, Paolo; Corda, Francesco; Gozzo, Franco; Menconi, Augusto; and Longoni, Angelo, 4,328,237, Cl. 424-274.000.

Cordis Corporation: *See—*
Gold, Philip, 4,327,747, Cl. 128-784.000.
Hampson, James, 4,327,735, Cl. 128-348.000.

Corley, Dewey A. Cup dispensing mechanism. 4,327,843, Cl. 221-210.000.

Cornell, James W. Safety device for a trouble light. 4,328,535, Cl. 362-362.000.

Corning Glass Works: *See—*
Beall, George H.; Hoda, Syed N.; and Waldron, Richard W., 4,328,299, Cl. 430-13.000.
Bonk, John A.; and Malmendier, Joseph W., 4,328,022, Cl. 65-43.000.
Buehl, Walter M., 4,328,017, Cl. 65-3.120.
Rauscher, Herbert E., 4,328,305, Cl. 430-351.000.
Siegfried, Robert W., 4,328,018, Cl. 65-3.120.

Corral, Francisco J.: *See—*
Tolley, William K.; and Corral, Francisco J., 4,328,192, Cl. 423-150.000.

Cortese, Richard; and Theeuwes, Felix, to ALZA Corporation. Osmotic device with hydrogel driving member. 4,327,725, Cl. 128-260.000.

Corvisier, Pierre. Device for forming costal prostheses. 4,327,715, Cl. 128-92.00B.

Coulter Electronics, Inc.: *See—*
Brunsting, Albert, 4,327,972, Cl. 350-437.000.

Cournoyer, Bernard T.; Bogren, Robert G.; and Wright, David M., to Wright Line Inc. Document storage file. 4,327,952, Cl. 312-184.000.

Coutta, John M. Object detection system for a shopping cart. 4,327,819, Cl. 186-62.000.

Coy, David H.: *See—*
Schally, Andrew V.; and Coy, David H., 4,328,134, Cl. 525-54.110.

Crawford, Roger A.: *See—*
Welch, Cletus N.; Loehr, Clifford E.; Crawford, Roger A.; and Carbaugh, John E., 4,328,200, Cl. 423-474.000.

Creusot-Loire: *See—*
Leroy, Pierre J., 4,328,031, Cl. 75-60.000.

Cronenberg, Richard A., to Becton, Dickinson and Company. Continuously draining trap for removal of condensate from a patient breathing circuit. 4,327,718, Cl. 128-205.120.

Cronvich, Lester: *See—*
Bell, Alfred J.; Polk, Albert S., Jr.; Cronvich, Lester; and Hardgrave, Everett J., Jr., 4,327,886, Cl. 244-3.290.

Crosby, Jeffrey N., to International Nickel Co., Inc., The. Electrodeposited palladium, method of preparation and electrical contact made thereby. 4,328,286, Cl. 428-636.000.

Crouch, Alan R.; and Lesley, Samuel, to Ricardo Consulting Engineers Limited. I.C. Engines. 4,327,679, Cl. 123-195.00R.

Crow, William M.; and Yerbury, Michael J., to Austin Company, The. Locator for source of electromagnetic radiation having unknown structure or orientation. 4,328,548, Cl. 364-449.000.

Crystal, Richard G.; Gabor, Andrew; and Klein, Enrique J., to Xerox Corporation. Print hammer assembly with multi-location impacts. 4,327,639, Cl. 101-93.340.

CTS Corporation: *See—*
Affolder, Steven L., 4,327,996, Cl. 425-78.000.

Cuneo, Giuseppe, to Black & Decker Inc. Trigger switch and printed circuit board arrangement for a portable tool. 4,328,405, Cl. 200-157.000.

Currie, Ian; and McMaster, Tom, to Archie Kidd Limited. Agricultural machine. 4,327,543, Cl. 56-344.000.

Curtis, Bernard J., to RCA Corporation. Method for end point detection in a plasma etching process. 4,328,068, Cl. 156-626.000.

Cyclotron Corporation, The: *See—*
Hemmerich, Johann, 4,328,079, Cl. 204-192.0SP.

Czerwinski, Watson P.: *See—*
DeSantis, Charles M.; Zannella, Albert H.; Begala, Michael W.; Wills, John R.; and Czerwinski, Watson P., 4,328,501, Cl. 343-749.000.

Czuszak, Charles C., to Elliott Turbomachinery Co., Inc. Bearing and lubrication system. 4,327,950, Cl. 308-128.000.

D. Swarvoski & Co., Glasschleiferei: *See—*
Swarovski, Daniel, 4,328,276, Cl. 428-213.000.

Dai, Shenghong A., to Upjohn Company, The. Novel process. 4,328,361, Cl. 560-130.000.

Daicel Chemical Industries, Ltd.: *See—*
Tanaka, Atsushi; Chiba, Toshiyuki; and Miyata, Hirotaka, 4,328,327, Cl. 526-66.000.

Daimler-Benz Aktiengesellschaft: *See—*
Geissler, Heinrich; and Gratz, Josef, 4,327,938, Cl. 280-784.000.
Scholz, Hansjurgen; Brambilla, Luigi; Backhaus, Hans-Gerd; and Korber, Jurgen, 4,327,937, Cl. 280-732.000.

Daito Sound Co., Ltd.: *See—*
Higuchi, Yoshio, 4,328,457, Cl. 320-36.000.

Dalton, Stuart M.: *See—*
Steiner, Peter; Gutterman, Carl; and Dalton, Stuart M., 4,328,201, Cl. 423-569.000.

Dalton, William E. Method for inducing a passive surface on beryllium. 4,328,047, Cl. 148-6.200.

Damond, Remy: *See—*
Beuchat, Roger; Charmoy, Pierre-Alain; and Damond, Remy, 4,327,625, Cl. 89-6.000.

Damrau, Wayne A., to Consolidated Papers, Inc. Edge dam assembly for paper coating apparatus. 4,327,662, Cl. 118-410.000.

D'Angelo, Antonio J.: *See—*
McKellin, Wilbur H.; Kolczynski, James R.; Mageli, Orville L.; and D'Angelo, Antonio J., 4,328,360, Cl. 560-129.000.

D'Angelo, Severino, to Horiba Instruments Incorporated. Dynamometer. 4,327,578, Cl. 73-117.000.

Daniel, John K.; Matthews, Donald P.; and Peet, Norton P., to Dow Chemical Company, The. Novel (((substituted-phenyl)methyl-)amino)benzenesulfonic acids and pharmaceutically-acceptable salts thereof. 4,328,244, Cl. 424-304.000.

Datascope Corp.: *See—*
Hanson, Bruce L.; and Wolvek, Sidney, 4,327,709, Cl. 128-1.00D.

Dauwalder, Fred R., to Caterpillar Tractor Co. Air intake assembly. 4,327,680, Cl. 123-195.00C.

Daviduk, Nicholas; and Haddad, James H., to Mobil Oil Corporation. Fluid zeolite catalyst conversion of alcohols and oxygenated derivatives to hydrocarbons by controlling exothermic reaction heat. 4,328,384, Cl. 585-469.000.

Davis, Burns: *See—*
Barbee, Robert B.; and Davis, Burns, 4,328,333, Cl. 528-301.000.

Davis, Richard K.; and Lambert, Joe C., to General Electric Company. DC Motor speed regulator. 4,328,447, Cl. 318-331.000.

Dawson Carbide Industries, Inc.: *See—*
Holmes, Richard, 4,327,902, Cl. 269-6.000.

Dayco Corporation: *See—*
Carey, Richard D., 4,327,636, Cl. 101-29.000.
Holden, Homer N.; and Sumrall, Reese, 4,327,474, Cl. 29-149.5NM.
Kleykamp, Donald L.; and Mathieu, Julien C., 4,327,839, Cl. 213-61.000.
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Walther, William D., 4,327,922, Cl. 277-37.000.

Decker, Thomas R.: *See—*
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Deconinck, Hugh F., to AGFA-GEVAERT N.V. Apparatus for applying a processing liquid to a sheet or web material. 4,327,456, Cl. 15-102.000.

Deeken, William O., to Goodyear Tire & Rubber Company, The. Composition for the elimination of circumferential stress cracks in spun polyesters. 4,328,108, Cl. 252-8.600.

Deepsea Ventures, Inc.: *See—*
Hinman, Mark H.; and Latimer, John P., 4,327,505, Cl. 37-54.000.

de Gunzburg, Melinda, to Pana-Plex Company, Inc. Illuminated outdoor sign and housing. 4,327,513, Cl. 40-572.000.

Degussa Aktiengesellschaft: *See—*
Bittner, Friedrich; Heimberger, Werner; Henkel, Kurt; Kriebitzsch, Norbert; Petzold, Martin; and Puschner, Kurt, 4,328,010, Cl. 55-51.000.

Dejaiffe, Robert; and Kells, Edward L., to Forty-Eight Insulations, Inc. Melting system and process for use in the production of high temperature mineral wool insulation. 4,328,019, Cl. 65-19.000.

de Klein, Willem J.: *See—*
Vis, Jan; and de Klein, Willem J., 4,328,112, Cl. 252-47.500.

DeLoach, John R.; Harris, Robert L.; Ihler, Garret M.; and Mayer, Richard T., to United States of America, Agriculture. Process for encapsulating additives in resealed erythrocytes for disseminating chemicals via the circulatory system. 4,327,710, Cl. 128-1.00R.

de Matteo, Mario A., to Thielex Plastics Corporation. Container for packaging semiconductor components. 4,327,832, Cl. 206-328.000.

de Maybaum, Blanca M. R. Instrument indicator of the proliferation magnitude in a tank. 4,328,460, Cl. 324-64.000.

Demeny, Michael G.; Dunfield, John C. G.; and Gabor, Andrew, to Xerox Corporation. Motion sensing apparatus. 4,328,453, Cl. 318-685.000.

Demetrescu, Mihai C.; and Demetrescu, Stefan G. Dynamic data display system, as for use with EEG. 4,328,491, Cl. 340-747.000.

Demetrescu, Stefan G.: *See*—
Demetrescu, Mihai C.; and Demetrescu, Stefan G., 4,328,491, Cl. 340-747.000.

Demirel, Turgut; Lee, Dah-Yinn; and Boybay, Mustafa, to Iowa State University Research Foundation Inc. Process of producing hydraulic cement from fly ash. 4,328,037, Cl. 106-85.000.

DeMoute, Jean-Pierre: *See*—
Martel, Jacques; Tessier, Jean; and DeMoute, Jean-Pierre, 4,328,167, Cl. 260-465.00F.

Denecke, Henry M. Method and apparatus for numerically converting a parallel binary coded number from a first unit system to a second unit system. 4,328,484, Cl. 340-347.0DD.

Denki Kaguku Kogyo Kabushiki Kaisha: *See*—
Tabata, Itsuo; Watanabe, Seiichi; and Shinoyama, Masayuki, 4,328,381, Cl. 570-236.000.

Denniston, James L., to Rockwell International Corporation. Apparatus for refueling an aircraft from a ship at sea. 4,327,784, Cl. 141-387.000.

de Pape, Robert: *See*—
Miranday, Jean-Pierre; Jacoboni, Charles; and de Pape, Robert, 4,328,318, Cl. 501-40.000.

Derichs, Josef; and Raasch, Hans, to W. Schlafhorst & Co. Method and apparatus for joining a thread. 4,327,546, Cl. 57-263.000.

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Ford, George W., Jr., 4,327,745, Cl. 128-765.000.

DeSoto, Inc.: *See*—
Lin, Shiow-Ching; and Noren, Gerry K., 4,328,138, Cl. 525-451.000.

Dessau, Ralph M.: *See*—
Heiba, El-Ahmadi I.; and Dessau, Ralph M., 4,328,363, Cl. 560-82.000.

Destree, Allen L. Method of preparing concrete column for attachment to beam. 4,327,703, Cl. 125-1.000.

Dettmers, Michael: *See*—
Weirich, Walter; and Dettmers, Michael, 4,327,628, Cl. 91-522.000.

Detweiler, Charles A., to Schmelzer Corporation. Valve assembly. 4,327,773, Cl. 137-625.660.

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Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, 4,328,307, Cl. 435-80.000.

Deutsche Angelgerate Manufactur (DAM) Hellmuth Kuntze GmbH: *See*—
Dorbandt, Klaus, 4,327,880, Cl. 242-84.20R.

Deutsche Babcock Aktiengesellschaft: *See*—
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De Villepoix, Raymond: *See*—
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De Vincentiis, Leonardo, to Ausoria Farmaceutici S.r.l. α-(3,4,5-Trimethoxyhenzoyl)thiopropionyl-glycine. 4,328,242, Cl. 424-301.000.

Devon, Thomas J., to Eastman Kodak Company. Homologation process. 4,328,379, Cl. 568-902.000.

DeVries, Daniel A. Portable exercise device. 4,327,907, Cl. 272-93.000.

Dickerson, Lee R., to United States of America, Navy. Method and apparatus for measurement of distance between holes with parallel axes. 4,327,493, Cl. 33-143.00R.

Dickey, David C.; Korb, Barry R.; Baroff, James H.; and Raff, Samuel J., to United States of America, Navy. Computational aid device for Ekelund ranging. 4,327,500, Cl. 33-457.000.

Dickey, Joseph W.; Moore, Paul M.; and Powell, Lloyd E., to United States of America, Navy. Acoustic leak detector. 4,327,576, Cl. 73-40.50A.

Dictaphone Corporation: *See*—
Chamberlin, David B., 4,328,397, Cl. 179-6.090.

Didier-Werke AG: *See*—
Tinnes, Bernhard J., 4,327,847, Cl. 222-591.000.

Diehl GmbH & Co.: *See*—
Grosse-Benne, Wilhelm; and Beermann, Paul, 4,327,642, Cl. 102-307.000.

Dierschke, Eugene G.: *See*—
Haesly, Barry F.; Harris, Richard D.; Dierschke, Eugene G.; and Hailey, Michael R., 4,327,964, Cl. 350-96.200.

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Dilger, Peter; Honig, Gunter; and Kauff, Helmut, to Robert Bosch GmbH. Apparatus for controlling the current through an electromagnetically actuatable injection valve in an internal combustion engine valve in an internal combustion engine. 4,328,526, Cl. 361-154.000.

Dimon, Donald F. Solar air conditioning system. 4,327,555, Cl. 62-485.000.

Divis, George F. Smoking device holder. 4,327,748, Cl. 131-187.000.

Dixon, Kenneth W.: *See*—
Morse, Lewis D.; and Dixon, Kenneth W., 4,328,149, Cl. 524-458.000.

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Docekal, Jiri; Parma, Ludvik; Pelant, Ivan; Sladky, Petr; and Zdravil, Josef, to Vyzkumny ustav chemickych zrizeni. Method of and apparatus for the continuous measurement of changes in rheological properties of monomers during polymerization. 4,327,587, Cl. 73-590.000.

Dr. C. Otto & Comp. G.m.b.H.: *See*—
Haese, Egon; Willms, Rolf; and Schultheiss, Karl D., 4,328,189, Cl. 422-224.000.
Pries, Erich; and Thubeauville, Heinz, 4,328,072, Cl. 201-1.000.

Dr. Ing. -Rudolf Hell GmbH: *See*—
Wellendorf, Klaus, 4,328,515, Cl. 358-80.000.

Dodge, Carl, to Halliburton Company. Methods and apparatus for acoustic logging in earth formations. 4,328,567, Cl. 367-32.000.

Dollyhigh, Samuel M.: *See*—
Jackson, Charlie M., Jr.; Dollyhigh, Samuel M.; and Shaw, David S., 4,327,581, Cl. 73-147.000.

Donalson, Dennis C.: *See*—
Alberghini, Alfred C.; and Donalson, Dennis C., 4,327,574, Cl. 73-19.000.

Dorbandt, Klaus, to Deutsche Angelgerate Manufactur (DAM) Hellmuth Kuntze GmbH. Releasable spool for fishing reels. 4,327,880, Cl. 242-84.20R.

Dormer, George J.: *See*—
Mancini, Gerold A.; and Dormer, George J., 4,328,032, Cl. 75-124.000.

Dorrer, Dieter: *See*—
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D'Ortenzio, Remo J., to Xerox Corporation. Filter for image pixels. 4,328,426, Cl. 250-578.000.

Dotson, Anderson O., Jr.; Wadsworth, Francis T.; and Wolford, Lionel T., to Saytech, Inc. Process for preparing nitrogen compounds. 4,328,357, Cl. 560-83.000.

Dover Corporation: *See*—
Wilson, Thomas A.; and Ward, James D., 4,327,765, Cl. 137-312.000.

Dow Chemical Company, The: *See*—
Burk, George A.; Witt, Brian G.; Swogger, Kurt W.; and Wilson, Charles A., 4,328,171, Cl. 260-465.400.
Daniel, John K.; Matthews, Donald P.; and Peet, Norton P., 4,328,244, Cl. 424-304.000.
Fazio, Michael J., 4,328,370, Cl. 564-486.000.
Karam, Henry J., 4,328,186, Cl. 422-132.000.
Nelson, Erik B.; and Eilers, Louis H., 4,328,036, Cl. 106-85.000.
Strojny, Edwin J., 4,328,373, Cl. 568-435.000.

Dowell, James R. Baseball game apparatus. 4,327,914, Cl. 273-93.00C.

Doya, Masaharu: *See*—
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Drabek, Jozef; and Boger, Manfred, to Ciba-Geigy Corporation. Phenoxyphenylisothioureas, production thereof and use thereof in pest control, and phenoxyphenylthioureas as intermediates for the production of the phenoxyphenylisothioureas and use thereof in pest control. 4,328,247, Cl. 424-326.000.

Drabek, Jozef: *See*—
Boger, Manfred; and Drabek, Jozef, 4,328,248, Cl. 424-326.000.

Dragerwerk Aktiengesellschaft: *See*—
Oetjen, Georg-Wilhelm; and Benthin, Frank, 4,327,717, Cl. 128-201.130.

Drago, Russell S.; and El A'mma, Anton, to University of Illinois Foundation. Heterogeneous anionic transition metal catalysts. 4,328,125, Cl. 252-426.000.

Drechsel, Erhart K.: *See*—
Sardisco, John B.; and Drechsel, Erhart K., 4,328,196, Cl. 423-309.000.

Dresser Industries, Inc.: *See*—
Martin, Paul W., 4,327,567, Cl. 72-119.000.

Drexler, Ludwig: *See*—
Keitel, Rolf; Pagel, Ernst-Olav; and Drexler, Ludwig, 4,328,480, Cl. 340-60.000.

Driessen, Antonius J. G. C.: *See*—
Van Den Plas, Roger J. Q.; Ruts, Josephus M.; and Driessen, Antonius J. G. C., 4,328,445, Cl. 315-46.000.

DuBois, Chester G.: *See*—
Brown, Peter W.; DuBois, Chester G.; Hartke, David J.; and Hunt, Paul R., 4,327,770, Cl. 137-614.050.

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Dudley, Jerry E.; and Thornton, Carrol G., to J. Ray McDermott & Co., Inc. Seam tracker for automatic welder. 4,328,416, Cl. 250-202.000.

Dudley, Phillip J.: *See*—
Perks, Roger; and Dudley, Phillip J., 4,328,399, Cl. 179-90.00K.

Duff, Clifford C.: *See*—
Salloum, Robert J.; and Duff, Clifford C., 4,328,368, Cl. 564-393.000.

Dukess, Joseph. Solar heat apparatus. 4,327,552, Cl. 60-641.700.

Dunfield, John C. G.: *See*—
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Dunigan, Francis P.: *See*—
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Du Pont de Nemours, E. I., and Company: *See*—
Adams, John B., Jr., 4,328,228, Cl. 424-250.000.
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Friar, Lawrence B.; Kuhrt, Noel H., Jr.; and Vanover, Joel L., 4,327,987, Cl. 354-317.000.
Novak, Ernest R., 4,328,329, Cl. 526-218.000.

Rapoport, Morris, 4,328,172, Cl. 260-465.80R.
Simons, Donald M., 4,328,139, Cl. 252-606.000.
Sitzler, Fred C., 4,327,956, Cl. 339-107.000.
Duracell International Inc.: *See*—
Taylor, Alwyn H., 4,328,288, Cl. 429-48.000.
Dybel, Frank R.; and MacDonald, Kenneth, to International Measurement & Control Co. Strain sensing device with magnetic mounting. 4,327,591, Cl. 73-855.000.
E M I Limited: *See*—
Way, Lewis J., 4,328,519, Cl. 360-67.000.
E. R. Squibb & Sons, Inc.: *See*—
Conley, Richard A.; Lam, Margaret M.; and High, Leroy B., 4,328,342, Cl. 546-153.000.
Haugwitz, Rudiger D.; and Maurer, Barbara V., 4,328,241, Cl. 424-300.000.
E-Z-EM Company, Inc.: *See*—
Katz, Seymour, 4,327,743, Cl. 128-736.000.
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Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,328,062, Cl. 156-353.000.
Eastern Specialty Company, The: *See*—
Carr, John M., 4,328,401, Cl. 200-11.00R.
Eastman Kodak Company: *See*—
Barbee, Robert B.; and Davis, Burns, 4,328,333, Cl. 528-301.000.
Devon, Thomas J., 4,328,379, Cl. 568-902.000.
Hyatt, John A.; and McCombs, Charles A., 4,328,162, Cl. 260-397.450.
Lee, Benedict M.; and Gibson, Gary W., 4,327,855, Cl. 226-97.000.
Sublett, Bobby J., 4,328,278, Cl. 428-246.000.
Eaton, Douglas J., to International Standard Electric Corporation. Card and card reader system. 4,328,415, Cl. 235-451.000.
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EC Erdolchemie GmbH: *See*—
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Ecker, Varda; Shah, Yogendra M.; and Chaudry, Imtiaz A., to Schering Corporation. Stable injectable labetalol formulation. 4,328,213, Cl. 424-173.000.
Ecological Consultants (Proprietary) Ltd.: *See*—
Friedmann, Eric H., 4,328,118, Cl. 252-314.000.
Edo, Kiyoto: *See*—
Koide, Yoshio; Edo, Kiyoto; and Ishida, Nakao, 4,328,212, Cl. 424-118.000.
Efinger, Arnold; Moser, Erwin; and Wessing, Egon, to Wickmann-Werke Boblingen GmbH. Apparatus for actuating electrical load-separating switches in an electricity supply network. 4,328,430, Cl. 307-114.000.
Eggleston, David O., to Shepherd Products U.S. Inc. Multi-wheel bed roller. 4,327,462, Cl. 16-47.000.
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Yanagida, Yoshitsugu; Higuchi, Mitsuo; Ito, Yoshiaki; Nakaji, Shigeru; and Ehiro, Syogo, 4,327,466, Cl. 29-90.00R.
Ehrhardt, Gerry H.; and Carlson, Gene D., to Frye Copysystems, Inc. Chemical carbonless copy paper and image receptor medium therefor. 4,327,939, Cl. 282-27.500.
Eich, Arnold M. Liquid wheel balancer. 4,327,582, Cl. 73-483.000.
Eilers, Louis H.: *See*—
Nelson, Erik B.; and Eilers, Louis H., 4,328,036, Cl. 106-85.000.
Eisenberg, Steven K.: *See*—
Milhem, Robert; Eisenberg, Steven K.; and Hancock, Mark W., 4,327,538, Cl. 56-1.000.
Eisenkolb, Klaus, to Voest-Alpine Aktiengesellschaft. Funicular railway. 4,327,647, Cl. 104-174.000.
El A'mma, Anton: *See*—
Drago, Russell S.; and El A'mma, Anton, 4,328,125, Cl. 252-426.000.
Elder Pharmaceuticals, Inc.: *See*—
Kaufman, Kurt D., 4,328,239, Cl. 424-279.000.
Electric Power Research Institute, Inc.: *See*—
Steiner, Peter; Gutterman, Carl; and Dalton, Stuart M., 4,328,201, Cl. 423-569.000.
Electro-Plasma, Inc.: *See*—
Muehlberger, Erich; and Kremith, Roland D., 4,328,257, Cl. 427-34.000.
Elias, Robert T., to Johnson & Johnson Baby Products Company. Catamenial device with an absorbent layer having admixture of discrete superabsorbent and introfying particles. 4,327,728, Cl. 128-285.000.
Elliott, Charles A., to RCA Corporation. Disc player having turntable height varying apparatus. 4,328,575, Cl. 369-269.000.
Elliott Turbomachinery Co., Inc.: *See*—
Czuszak, Charles C., 4,327,950, Cl. 308-128.000.
Ellis, Leonard C.: *See*—
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Emerson Electric Co.: *See*—
Hierholzer, Frank J., Jr.; Ancona, John A.; and Shelton, Gerald L., 4,328,529, Cl. 361-266.000.
Emery Industries, Inc.: *See*—
Fayter, Richard G., Jr., 4,328,168, Cl. 260-465.00K.
Hall, Allen L., 4,328,169, Cl. 260-465.00K.
Emonet, Henri, to Maco-Meudon. Percussion tool casing. 4,327,807, Cl. 173-134.000.
Emory, Edward P. Universal lawn spreader attachment for lawn mowers. 4,327,541, Cl. 56-16.800.
Endelson, Robert A. Dental floss dispenser in credit card format. 4,327,755, Cl. 132-92.00R.
Endo, Hisao: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.
Engel, Arno; Laucht, Walter; and Tiedtke, Wille, to Estel Hoesch Werke AG. Cooling element for a metallurgical furnace. 4,327,900, Cl. 266-193.000.
Engel, Wolfhard: *See*—
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Engelhard Minerals & Chemicals Corporation: *See*—
Bartholic, David B., 4,328,091, Cl. 208-91.000.
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English Card Clothing Company Limited, The: *See*—
Ennis, Brian J., 4,327,525, Cl. 51-242.000.
Ennis, Brian J., to English Card Clothing Company Limited, The. Servicing attachment for a carding machine. 4,327,525, Cl. 51-242.000.
Ensign-Bickford Industries, Inc.: *See*—
Kelly, Cornelius J. N., 4,327,480, Cl. 29-611.000.
Ensmann, Burt W.: *See*—
Cooper, Julius; and Ensmann, Burt W., 4,327,519, Cl. 46-262.000.
Erich, Otis G., Jr., to Union Oil Company of California. Rotating eccentric weight apparatus and method for generating coded shear wave signals. 4,327,814, Cl. 181-121.000.
Erndt, Hans: *See*—
Palloch, Herbert; and Erndt, Hans, 4,328,404, Cl. 200-153.0SC.
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Engel, Arno; Laucht, Walter; and Tiedtke, Wille, 4,327,900, Cl. 266-193.000.
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Wasserman, David; Versfelt, Charles C.; Hahn, Dowon; and Wachter, Michael P., 4,328,204, Cl. 424-19.000.
Ethyl Corporation: *See*—
Huang, Yun-Yang, 4,328,129, Cl. 252-465.000.
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Thomas, Rudolf; Stetter, Jorg; Eue, Ludwig; and Schmidt, Robert R., 4,328,029, Cl. 71-92.000.
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Koller, Stefan; Eugster, Peter; and Agarwal, Suresh C., 4,327,999, Cl. 8-526.000.
Evans, Evelyn, to Clairol Incorporated. Hair bleaching composition containing solid polyolefin polymer and method for hair bleaching. 4,327,751, Cl. 132-7.000.
Evans, Karl K. Light filter assembly for photographic camera. 4,327,984, Cl. 354-270.000.
Evans, Rix E. Continuously variable transmission. 4,327,604, Cl. 74-751.000.
Evans, Thomas E.; and Keyes, David S., to Texas Instruments Incorporated. Condition responsive electrical switch and method of making. 4,328,406, Cl. 200-293.000.
Ewing, James H.; and Clark, William R., to MKS Instruments, Inc. Linearized controlled valves. 4,327,894, Cl. 251-233.000.
Exxon Research & Engineering Co.: *See*—
Ryer, Jack; Brois, Stanley J.; and Nostrand, Elbert D., 4,328,003, Cl. 44-53.000.
Stuckey, A. Nelson, Jr.; and Shutt, John R., 4,328,090, Cl. 208-44.000.
Eyley, Stephen C.: *See*—
Raphael, Richard A.; Eyley, Stephen C.; and Coltman, Stephen C. W., 4,328,341, Cl. 546-92.000.
F + R Forster & Rothmann GmbH: *See*—
Forster, Steffen, 4,327,589, Cl. 73-741.000.
Fabian, James L.: *See*—
Singletary, Michael P.; and Fabian, James L., 4,328,140, Cl. 524-322.000.
Falbel, Gerald, to Barnes Engineering Company. Horizon sensor. 4,328,421, Cl. 250-347.000.
Fallier, Charles N., Jr.; and Proud, Joseph M., to GTE Laboratories Incorporated. Method and apparatus for starting high intensity discharge lamps. 4,328,446, Cl. 315-47.000.
Farewell, John P.; and Lipp, David W., to American Cyanamid Company. Stabilization of rosin dispersions with low molecular weight non-ionic polymers. 4,328,141, Cl. 524-272.000.
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McCauley, Edward D.; Farlow, James C.; and Adams, William T., Jr., 4,327,798, Cl. 164-56.100.

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Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,328,240, Cl. 424-285.000.

Fauchier, Jess F., II; and Anderson, Richard D., to Pako, Corporation. Variable speed photographic paper feed system. 4,327,878, Cl. 242-67.30R.

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Fayter, Richard G., Jr., to Emery Industries, Inc. Process for the preparation of vinylcyclopropane derivatives. 4,328,168, Cl. 260-465.00K.

Fazio, Michael J., to Dow Chemical Company, The. Ammonation of trialkanolamines. 4,328,370, Cl. 564-486.000.

Fazlin, Fazal A., to Micro-Plate, Inc. Plasma desmearing apparatus and method. 4,328,081, Cl. 204-192.00E.

Feaster, William W., to C. A. Greiner & Sohne GmbH & Co. KG. Blood extraction device. 4,327,746, Cl. 128-764.000.

Feathers, Leonard J., to Chubb Panorama Limited. Back-carrying harness assemblies. 4,327,851, Cl. 224-211.000.

Fehrenbach, Siegfried; Utz, Eberhard; and Herbst, Kurt, to Robert Bosch GmbH. Pressure control valve. 4,327,767, Cl. 137-510.000.

Fehrer, Ernst. Apparatus for making a yarn. 4,327,545, Cl. 57-5.000.

Feldstein, Nathan, to Surface Technology, Inc. Method for rendering non-platable substrates platable. 4,328,266, Cl. 427-305.000.

Felix, Dorothee: *See*—
Eschenmoser, Albert; and Felix, Dorothee, 4,328,383, Cl. 585-357.000.

Fenstermaker, Michael, to Orion Industries, Inc. Battery tray. 4,327,809, Cl. 180-68.500.

Ferguson, Charles N. Foam composition and process. 4,328,034, Cl. 106-75.000.

Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. Efficiency meter for a vehicle engine. 4,327,577, Cl. 73-115.000.

Filtroba AG: *See*—
Moritz, Eugen; and Moritz, Christian, 4,328,100, Cl. 210-304.000.

Fincke, James R., to United States of America, Energy. Hydrostatic bearings for a turbine fluid flow metering device. 4,327,592, Cl. 73-861.910.

Findeisen, Kurt; and Linker, Karl-Heinz, to Bayer Aktiengesellschaft. Preparation of trimethylsilyl cyanide. 4,328,351, Cl. 556-415.000.

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Haas, Peter; Muller, Heinz; Seifert, Peter; Wagner, Kuno; Findeisen, Kurt; and Konig, Klaus, 4,328,321, Cl. 521-108.000.

Finkelstein, Richard A.; and Honda, Takeshi, to Board of Regents, The University of Texas System. Cholera vaccine. 4,328,209, Cl. 424-92.000.

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Eschenmoser, Albert; and Felix, Dorothee, 4,328,383, Cl. 585-357.000.

Fischer, Reimer; Jager, Walter; and von Waclawiczek, Herbert, to GHT Gesellschaft fur Hoch-Temperaturreaktor-Technik mbH. Coal gasification. 4,328,009, Cl. 48-202.000.

Fisher, Gordon L.; and Makely, Joseph V., to International Nickel Co., Inc., The. Electrode and sludge collector support device and electroplating therewith. 4,328,076, Cl. 204-14.00R.

Fisons Limited: *See*—
Brown, Roger C.; Cairns, Hugh; and Payne, Anthony R., 4,328,230, Cl. 424-256.000.
Raphael, Richard A.; Eyley, Stephen C.; and Coltman, Stephen C. W., 4,328,341, Cl. 546-92.000.

Fitz, Forest G., Jr.: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,327,617, Cl. 83-419.000.

Fitzgibbons, William O.; and Barko, Andrew J., to Standard Oil Company. Removal of cyanides from acetonitrile. 4,328,075, Cl. 203-37.000.

Flanagan, Joseph E.: *See*—
Frankel, Milton B.; and Flanagan, Joseph E., 4,328,005, Cl. 44-57.000.

Fletcher, Roy W.; and Forte, Anthony D., to Union Special Corporation. Button clamp assembly. 4,327,652, Cl. 112-110.000.

Flow General, Inc.: *See*—
Flowers, Earl S., 4,328,197, Cl. 423-327.000.

Flowers, Earl S., to Flow General, Inc. Metal-micelle asbestos and treatment of asbestos and other silicate minerals to reduce their harmful properties. 4,328,197, Cl. 423-327.000.

Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-substituted prostanoic acids and congeners. 4,328,358, Cl. 560-121.000.

Fohl, Artur, to Repa Feinstanzwerk GmbH. Belt-braking device for safety belt systems. 4,327,881, Cl. 242-107.200.

Foller, Werner, to Gestra-KSB Vertriebsgesellschaft mbH & Co. Bimetallic controlled steam trap. 4,327,863, Cl. 236-59.000.

Ford, George W., Jr., to Deseret Company, The. Blood sampling device. 4,327,745, Cl. 128-765.000.

Ford Motor Company: *See*—
Schechter, Michael M., 4,327,695, Cl. 123-504.000.
Vivian, Lloyd R., Jr., 4,327,601, Cl. 74-552.000.

Forgach, Lilla: *See*—
Zajer nee Balazs, Maria; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,328,231, Cl. 424-256.000.

Forster, Steffen, to F + R Forster & Rothmann GmbH. Foot pump pressure gauge having an integrated housing and connector. 4,327,589, Cl. 73-741.000.

Forte, Anthony D.: *See*—
Fletcher, Roy W.; and Forte, Anthony D., 4,327,652, Cl. 112-110.000.

Forty-Eight Insulations, Inc.: *See*—
Dejaiffe, Robert; and Kells, Edward L., 4,328,019, Cl. 65-19.000.

Foster, David B., to Learning Games Limited. Apparatus for training golf players. 4,327,918, Cl. 273-186.00R.

Fowler, Larry G., to Inter-American Transport Equipment Company. High lift, side dumping vehicle. 4,327,945, Cl. 298-11.000.

Frankel, Milton B.; and Flanagan, Joseph E., to Rockwell International Corporation. Polynitro alkyl additives for liquid hydrocarbon motor fuels. 4,328,005, Cl. 44-57.000.

Frankhouser, Paul L., to Arrow International, Inc. Catheter shield. 4,327,723, Cl. 128-214.400.

Frankila, John W.; and Stephenson, Robert L., to Allied Corporation. Seat belt retractor with manual lock up. 4,327,882, Cl. 242-107.40A.

Frankl & Kirchner GmbH & Co. KG, Fabrik fur Elektromotoren u. elektrische Apparate: *See*—
Palloch, Herbert; and Erndt, Hans, 4,328,404, Cl. 200-153.0SC.

Fratelli Sandretto S.p.A.: *See*—
Calligaris, Mario, 4,328,449, Cl. 318-571.000.

Fredrickson, Robert U. Orchard heater. 4,327,704, Cl. 126-59.500.

Fredriksen, Thorbjoern R.; and Villers, Philippe, to Computervision Corporation. Method and apparatus for targetless wafer alignment. 4,328,553, Cl. 364-559.000.

Freitag, Dieter: *See*—
Schmidt, Manfred; Freitag, Dieter; Bottenbruch, Ludwig; Reinking, Klaus; Rohr, Harry; and Medem, Harald, 4,328,174, Cl. 260-930.000.

French, John B. Tandem mass spectrometer with open structure AC-only rod sections, and method of operating a mass spectrometer system. 4,328,420, Cl. 250-282.000.

Frenkel, Barbara I.: *See*—
Frenkel, Richard E.; and Frenkel, Barbara I., 4,327,712, Cl. 128-22.000.

Frenkel, Richard E.; and Frenkel, Barbara I. Imagescope. 4,327,712, Cl. 128-22.000.

Frey, Bernhard, to Hydrowatt Systems Limited. Seal for a cylinder-piston arrangement. 4,327,629, Cl. 92-86.500.

Freytag, Arthur H.; and Cooke, Rodney D., to Great Western Sugar Company. Method of increasing sugar extraction efficiency from sugar-containing plant tissue with use of carbon dioxide. 4,328,043, Cl. 127-44.000.

Friar, Lawrence B.; Kuhrt, Noel H., Jr.; and Vanover, Joel L., to Du Pont de Nemours, E. I., and Company. Film processor. 4,327,987, Cl. 354-317.000.

Friede, Patrick W., to Caterpillar Tractor Co. Blocking mechanism. 4,327,599, Cl. 74-483.00R.

Friedli, Hans; Gut, Edwin; and Aeschbach, Peter, to Swiss Aluminium Ltd. Device for servicing electrolytic cells. 4,328,085, Cl. 204-245.000.

Friedmann, Eric H., to Ecological Consultants (Proprietary) Ltd. Algae processing. 4,328,118, Cl. 252-314.000.

Friedrich Theysohn, Firma: *See*—
Theysohn, Friedrich, 4,327,859, Cl. 228-107.000.

Friedwardt M. Winterberg. Method for the initiation of fusion reactions for the controlled release of energy. 4,328,070, Cl. 376-102.000.

Frink, Russell E.; and Milianowicz, Stanislaw A., to Westinghouse Electric Corp. Single barrel puffer circuit interrupter. 4,328,403, Cl. 200-148.00A.

Fritschy, Hugo: *See*—
Futterer, Bodo; Mayer, Jurgen; and Fritschy, Hugo, 4,327,479, Cl. 29-596.000.

Fritz, Adolf: *See*—
Adler, Karl-Heinz; Fritz, Adolf; Brand, Gunter; and Kielbas, Eugen, 4,328,439, Cl. 310-70.00R.

Fritz, Jack E., to Wolverine Aluminum Corporation. Insulated siding system. 4,327,528, Cl. 52-309.100.

Frohlich, Eckhard; and Mattka, Gunter, to STAHL GmbH & Co. Sheet separating apparatus. 4,327,906, Cl. 271-103.000.

Froome, Keith D., to National Research Development Corporation. Refractometer. 4,327,585, Cl. 374-45.000.

Frye Copysystems, Inc.: *See*—
Ehrhardt, Gerry H.; and Carlson, Gene D., 4,327,939, Cl. 282-27.500.

Fuchs, Harold E., to Western Electric Co., Inc. Chromate conversion coatings. 4,328,046, Cl. 148-6.200.

Fuji Mfg. Co., Ltd.: *See*—
Asai, Koichi; and Kawada, Tousuke, 4,327,484, Cl. 29-741.000.

Fuji Photo Film Co., Ltd.: *See*—
Idota, Yoshio; and Yamada, Minoru, 4,328,306, Cl. 430-393.000.
Kiuchi, Seiji; and Imai, Shoji, 4,328,066, Cl. 156-506.000.
Kondo, Asaji, 4,328,184, Cl. 422-58.000.
Nishimura, Tatsuo; Mifune, Hiroyuki; Fuseya, Yoshiharu; Urata, Yukihide; Shishido, Tadao; and Kasama, Yasuo, 4,328,302, Cl. 430-264.000.
Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, 4,328,304, Cl. 430-331.000.

Fuji Photo Optical Co., Ltd.: *See*—
Kagechika, Takashi, 4,327,976, Cl. 354-25.000.

Fujii, Setsuro; Unemi, Norio; and Takeda, Setsuo, to Taiho Pharmaceutical Company Limited. Anti-cancer composition for delivering 5-fluorouracil to cancer tissues. 4,328,229, Cl. 424-251.000.

Fujimori, Hikoichiro, to Takeuchi Press Industries Co., Ltd. Apparatus for four-color halftone printing. 4,327,637, Cl. 101-40.000.

Fujimoto, Toshio, to Fujiya Kabushiki Kaisha. Weather forecasting device. 4,327,583, Cl. 73-386.000.

Fujioka, Tomio: *See*—
Tsurumi, Yoshihiro; Fujioka, Tomio; Matsuzaki, Toshio; and Wakabayashi, Hidechika, 4,328,312, Cl. 435-192.000.

Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, to Sumitomo Chemical Company, Limited. Production of substituted phenylurea. 4,328,166, Cl. 260-453.0AR.

Fujitsu Limited: *See*—
Kurahashi, Toshio; Tokitomo, Kazuo; and Ono, Toshihiko, 4,328,262, Cl. 427-93.000.
Kurahashi, Toshio; Tokitomo, Kazuo; and Kiriseko, Tadashi, 4,328,263, Cl. 427-93.000.

Fujiya Kabushiki Kaisha: *See*—
Fujimoto, Toshio, 4,327,583, Cl. 73-386.000.

Fukuda, Tamotsu: *See*—
Akutagawa, Kenichi; Yoshida, Hitoshi; Hattori, Tadashi; Takata, Akira; and Fukuda, Tamotsu, 4,327,685, Cl. 123-402.000.

Fukushima, Masami: *See*—
Yoneda, Tetsuzo; Sogo, Yoshitaka; Fukushima, Masami; and Miyagawa, Shinichi, 4,327,598, Cl. 74-467.000.

Fumagalli, Angelo: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,328,240, Cl. 424-285.000.

Furihato, Makoto; Machida, Toyotaka; and Ikemura, Yuichi, to Hitachi, Ltd.; and Victor Company of Japan, Ltd. Synchronizing signal generator device for television. 4,328,513, Cl. 358-19.000.

Furukawa Electric Company, Ltd., The: *See*—
Koizumi, Tatsuya; Furuya, Shuichi; Matsumoto, Koji; and Karasawa, Kensuke, 4,327,801, Cl. 165-104.210.

Furuya, Shuichi: *See*—
Koizumi, Tatsuya; Furuya, Shuichi; Matsumoto, Koji; and Karasawa, Kensuke, 4,327,801, Cl. 165-104.210.

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Futterer, Bodo; Mayer, Jurgen; and Fritschy, Hugo, to Interelectric Aktiengesellschaft. Method for assembling a stator for an electric machine. 4,327,479, Cl. 29-596.000.

G. D. Searle & Co.: *See*—
Collins, Paul W.; and Pappo, Raphael, 4,328,355, Cl. 560-53.000.

G.O.R. Applicazioni Speciali S.p.A.: *See*—
Cesano, Franco, 4,328,067, Cl. 156-511.000.

Gabby, John L.; Ashby, Gerald K.; Cameron, Dennis W.; and Theuer, Richard C., to Mead Johnson & Company. Bran tablet composition and process. 4,328,217, Cl. 424-195.000.

Gabdulkhaev, Talgat G.: *See*—
Kurbanov, Ildus A.; Jusupov, Rasikh K.; Borovik, Roman V.; Gabdulkhaev, Talgat G.; and Kurbanova, Ilmira A., 4,328,208, Cl. 424-88.000.

Gabor, Andrew, to Xerox Corporation. Closed loop velocity control system for a movable element. 4,328,450, Cl. 318-561.000.

Gabor, Andrew: *See*—
Crystal, Richard G.; Gabor, Andrew; and Klein, Enrique J., 4,327,639, Cl. 101-93.340.
Demeny, Michael G.; Dunfield, John C. G.; and Gabor, Andrew, 4,328,453, Cl. 318-685.000.

GAF Corporation: *See*—
Kliegman, Jonathan M.; and McCarthy, Robert F., 4,328,026, Cl. 71-86.000.

Gallie, Brenda L., to University of Toronto, Governing Council of the. Cryoenucleation tool. 4,327,733, Cl. 128-303.100.

Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., to Farmitalia Carlo Erba S.p.A. Certain PGI_1 compounds and their pharmaceutical composition and methods. 4,328,240, Cl. 424-285.000.

Garasi, Louis A.; and Hayes, Ronald F., to Gruber Systems, Inc. Method for making a cast toilet base of plastics material. 4,328,179, Cl. 264-271.100.

Garlock Inc.: *See*—
Alexander, Ronald J.; and Bainard, Dean R., 4,327,925, Cl. 277-212.0FB.

Gas Research Institute: *See*—
Zimmer, Jon W., Sr., 4,327,671, Cl. 122-44.00A.

Gastinel, Jean, to Thomson-CSF. Processor circuit for video data terminal. 4,328,557, Cl. 364-900.000.

Gates Rubber Company, The: *See*—
Tally, David N., 4,327,775, Cl. 138-103.000.

Gaudu, Rene: *See*—
Van den Broek, Philippe; Gaudu, Rene; and Carrier, Paul, 4,328,479, Cl. 340-58.000.

Gauronski, John F.; and McGibbon, Gary M., to Xerox Corporation. Method and apparatus for performing job recovery in a reproduction machine. 4,327,993, Cl. 355-14.0SH.

Gawain, Theodore H.: *See*—
Biblarz, Oscar; and Gawain, Theodore H., 4,328,436, Cl. 310-11.000.

Gawel, Henry A.: *See*—
Horodysky, Andrew G.; Kaminski, Joan M.; Ashjian, Henry; and Gawel, Henry A., 4,328,113, Cl. 252-49.600.

Gaylo, Keith R.: *See*—
Scarton, Henry A.; Kennedy, Warren C.; and Gaylo, Keith R., 4,327,817, Cl. 181-296.000.

Gebruder Linck, Maschinenfabrik und Eisengiesserei "Gatterlinck": *See*—
Reuter, Alfred, 4,327,789, Cl. 144-326.00R.

Geidies, Ulrich; and Wilmer, Gerhard, to Krupp-Koppers GmbH. Process for purifying and cooling partial oxidation gases containing dust-like impurities. 4,328,011, Cl. 55-89.000.

Geissler, Heinrich; and Gratz, Josef, to Daimler-Benz Aktiengesellschaft. Vehicle frame with an energy-dissipating frame part. 4,327,938, Cl. 280-784.000.

Gelbenegger, Franz: *See*—
Prahl, Jan; and Gelbenegger, Franz, 4,327,727, Cl. 128-283.000.

Geller, William L., to GTE Laboratories Incorporated. Comparator circuit with offset correction. 4,328,434, Cl. 307-359.000.

General Dynamics Corporation: *See*—
Stern, Theodore G.; and Peterson, David M., 4,328,389, Cl. 136-246.000.

General Dynamics, Pomona Division: *See*—
Piesik, Edward T., 4,327,624, Cl. 89-1.816.

General Eastern Instruments Corporation: *See*—
Harding, John C., Jr., 4,328,455, Cl. 320-1.000.

General Electric Company: *See*—
Berkowitz, Ami E., 4,328,503, Cl. 346-74.500.
Bond, Paul A., 4,328,427, Cl. 290-3.000.
Bower, Arnold B., Jr., 4,327,947, Cl. 299-86.000.
Chung, Rack H.; and Kray, William D., 4,328,346, Cl. 548-110.000.
Davis, Richard K.; and Lambert, Joe C., 4,328,447, Cl. 318-331.000.
Haller, Theodore R.; Jones, Marshall G.; Kliman, Gerald B.; and Tompkins, Russell E., 4,328,411, Cl. 219-121.0EH.
Harris, Lawrence A., 4,328,080, Cl. 204-192.0EC.
Medford, George F., 4,328,137, Cl. 525-474.000.
Molari, Richard E., Jr., 4,328,277, Cl. 428-215.000.
Quine, John P., 4,328,471, Cl. 333-128.000.
Shah, Bakulesh N., 4,328,353, Cl. 556-472.000.
Siemers, Paul A.; and McKee, Douglas W., 4,328,285, Cl. 428-633.000.
Woods, Lee O., 4,327,481, Cl. 29-619.000.
Zolman, Charles T., 4,328,438, Cl. 310-68.00R.
Zumpini, Joseph J.; Buda, Paul R.; and Prada, Luis E., 4,327,556, Cl. 62-153.000.

General Foods Inc.: *See*—
Murray, E. Donald; Barker, Larry D.; and Woodman, Brenda J., 4,328,252, Cl. 426-262.000.

General Motors Corporation: *See*—
Salloum, Robert J.; and Duff, Clifford C., 4,328,368, Cl. 564-393.000.
Vander Bok, Arnold, 4,327,677, Cl. 123-90.400.

Geo. A. Hormel & Co.: *See*—
Leining, Lyndon R.; and Simonson, Kent L., 4,327,633, Cl. 99-589.000.

Gerber Garment Technology, Inc.: *See*—
Gerber, Heinz J.; and Hevenor, Charles M., 4,327,615, Cl. 83-49.000.

Gerber, Heinz J.; and Hevenor, Charles M., to Gerber Garment Technology, Inc. Method and apparatus for cutting sheet material with preprocessed data. 4,327,615, Cl. 83-49.000.

Gerdes, Donald F.: *See*—
Telchuk, Steve E., Jr.; Brown, Leslie H.; and Gerdes, Donald F., 4,328,012, Cl. 55-90.000.

Gerry, Martin E. Alternating current energized ignition system. 4,327,701, Cl. 123-598.000.

Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule: *See*—
Kovari, Kalman; Koppel, Jakob; and Amstad, Christian, 4,327,590, Cl. 73-784.000.

Gestra-KSB Vertriebsgesellschaft mbH & Co.: *See*—
Foller, Werner, 4,327,863, Cl. 236-59.000.

Geutebruck Geratebau GmbH: *See*—
Geutebruck, Thomas; and Dorrer, Dieter, 4,327,983, Cl. 354-171.000.

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Gevipi AG: *See*—
Uhlmann, Joachim, 4,327,758, Cl. 137-625.170.

Gewerkschaft Eisenhutte Westfalia: *See*—
Kirchbrucher, Rudiger; and Becker, Kunibert, 4,327,946, Cl. 299-33.000.

Gewerkschaft Eisenhutte Westialia: *See*—
Weirich, Walter; and Dettmers, Michael, 4,327,628, Cl. 91-522.000.

Geyken, Erwin: *See*—
Vanhorebeek, Remi; Geyken, Erwin; Mayer, Peter; Schausberger, Helmut; and Brunner, Rudolf, 4,327,988, Cl. 354-320.000.

GHT Gesellschaft fur Hoch-Temperaturreaktor-Technik mbH: *See*—
Fischer, Reimer; Jager, Walter; and von Waclawiczek, Herbert, 4,328,009, Cl. 48-202.000.

Gibson, Gary W.: *See*—
Lee, Benedict M.; and Gibson, Gary W., 4,327,855, Cl. 226-97.000.

Gibson, Harvey P. Backpack harness. 4,327,852, Cl. 224-214.000.

Gieles, Joannes P. M.: *See—*
Khoe, Giok D.; Gieles, Joannes P. M.; and Kuyt, Gerard, 4,327,963, Cl. 350-96.180.
Gigliotti, Giuseppe: *See—*
Jolly, Jean; Gigliotti, Giuseppe; Pavan, Charles; and Bulidon, Jacques, 4,328,173, Cl. 260-501.160.
Gilbert, Charles H.: *See—*
Wyman, Ransome J.; Alshin, Richard A.; and Gilbert, Charles H., 4,327,793, Cl. 152-323.000.
Gilbert, Jack J., to Metropolitan Vacuum Cleaner Co., Inc. Combined steam and vacuum cleaner. 4,327,459, Cl. 15-321.000.
Giordano, Claudio; and Casagrande, Francesco, to Montedison S.p.A. Process for preparing esters of arylacetic acids from alpha-haloalkylarylketones. 4,328,356, Cl. 560-56.000.
Girard, Louis J. Method of intraocular implanting an artificial lens. 4,327,450, Cl. 3-13.000.
Giutronich, John E.; and Mills, David R., to Unisearch Limited. Radiation concentrator and distributor. 4,327,969, Cl. 350-296.000.
Givaudan Corporation: *See—*
Oppolzer, Wolfgang, 4,328,352, Cl. 556-436.000.
Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, 4,328,347, Cl. 548-213.000.
Glatz, Walter: *See—*
Morgan, Hugh T.; and Glatz, Walter, 4,328,418, Cl. 250-213.0VT.
Glickman, David: *See—*
Convis, Danny B.; Glickman, David; and Rosenbaum, Walter S., 4,328,561, Cl. 364-900.000.
Globus, Alfred R., to United International Research, Inc. Stabilization of ethanol-gasoline mixtures. 4,328,004, Cl. 44-56.000.
Glock, Eugene, to American Brands, Inc. Apparatus for increasing the filling capacity of tobacco. 4,327,750, Cl. 131-292.000.
Godare, William L.; and Wells, Frederic D., Jr., to W-K-M Wellhead Systems, Inc. Baffle plate for steam separator. 4,328,013, Cl. 55-184.000.
Goddard, Christopher D. J., to Redland Automation Limited. Stuffing box for introducing instrument into high pressure conduit. 4,327,586, Cl. 73-432.00R.
Godefroy, Pierre, to Thomson-Brandt. Process of opacification of a gaseous medium in the optical and infrared bands of the electromagnetic spectrum. 4,328,117, Cl. 252-305.000.
Godin, Michael C. Method and apparatus for producing optical effects. 4,327,980, Cl. 354-113.000.
Goehlich, Lothar; and Kretschmer, Klaus, to Siemens Aktiengesellschaft. Cable fitting with an elastic insulator and metallic housing. 4,328,393, Cl. 174-73.00R.
Goetz, Norbert: *See—*
Buschmann, Ernst; Goetz, Norbert; Zeeh, Bernd; and Varwig, Juergen, 4,328,380, Cl. 570-191.000.
Gold, Joseph. Anti Walker 256 carcinoma agent and combination thereof. 4,328,246, Cl. 424-308.000.
Gold, Philip, to Cordis Corporation. Terminal assembly for a carbon fiber implantable lead. 4,327,747, Cl. 128-784.000.
Goldin, Jack; and Pagano, Richard R., to Hanover, George. Endotracheal tube with topical agent delivery system and method of using the same. 4,327,721, Cl. 128-207.150.
Goodall, Richard. Digital data link for truck weighing applications. 4,328,494, Cl. 340-870.180.
Goodman, James P.; and Boswell, David B., to United States of America, Navy. Electrical energy storage type filter. 4,328,474, Cl. 333-176.000.
Goodwin, Eber L.; Borke, Thomas J.; and Armstrong, Joel D., to AM International, Inc. Dual-head duplicator with alternate simplexing capability. 4,327,641, Cl. 101-144.000.
Goodyear Aerospace Corporation: *See—*
Beck, Arnold A.; and Ruof, Edgar J., 4,327,948, Cl. 303-96.000.
Quaint, Glenn W., 4,327,467, Cl. 29-113.00R.
Goodyear Tire & Rubber Company, The: *See—*
Deeken, William O., 4,328,108, Cl. 252-8.600.
Landers, Samuel P., 4,327,792, Cl. 152-209.00R.
Gorska-Poczopko, Jadwiga: *See—*
Witek, Stanislaw; Grobelny, Damian; Gorska-Poczopko, Jadwiga; Bakuniak, Edmund; Bakuniak, Irena; and Ptaszkowska, Janina, 4,328,226, Cl. 424-248.400.
Gottschalk, Robert E., to Panavision, Incorporated. Flexible coupling. 4,327,562, Cl. 464-75.000.
Gould, Arthur. Lens cap holder. 4,327,960, Cl. 350-65.000.
Gould Inc.: *See—*
Stewart, Ross E., 4,327,995, Cl. 403-224.000.
Szymborski, Joseph; and Unetic, Frank D., 4,328,290, Cl. 429-54.000.
Governale, Bernard C., to Peachtree Doors, Inc. Door with glass panel. 4,327,535, Cl. 52-309.110.
Gozzo, Franco: *See—*
Piccardi, Paolo; Corda, Francesco; Gozzo, Franco; Menconi, Augusto; and Longoni, Angelo, 4,328,237, Cl. 424-274.000.
Graboyes, Harold; Kasper, Thomas J.; and Vaidya, Praful D., to SK&F Lab Co. Process for preparing 5-methyl-4-imidazolecarboxylic acid esters. 4,328,349, Cl. 548-343.000.
Granata, Peter J.: *See—*
Allen, Jay W.; and Granata, Peter J., 4,328,525, Cl. 361-152.000.
Grant, Gerald B.; Madsen, Roger J.; and Laing, David A., to Victor Equipment Company. Traveling torch. 4,327,898, Cl. 266-67.000.
Grant, Hendrie J.: *See—*
Howland, Leland L.; Grant, Hendrie J.; and Taylor, David H., 4,327,558, Cl. 62-160.000.
Grantham, Frederick W. Multi-station laundry feeder. 4,327,510, Cl. 38-8.000.
Gratschew, Stanislaw. Collapsible tube-type package for pastelike substances comprising a rigid container and an inner flexible bag. 4,327,844, Cl. 222-100.000.
Gratz, Josef: *See—*
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Gravely, Edward J., to Universal Window Corporation. Emergency egress casement window. 4,327,523, Cl. 49-141.000.
Great Western Sugar Company: *See—*
Freytag, Arthur H.; and Cooke, Rodney D., 4,328,043, Cl. 127-44.000.
Green, Donald L., to Beecham Inc. Fabric conditioning articles and methods of use. 4,328,110, Cl. 252-8.750.
Green, Philip S.; Saraf, Dilip G.; and Havlice, James F. Endoscopic method & apparatus including ultrasonic B-scan imaging. 4,327,738, Cl. 128-660.000.
Greene, Franklin R.: *See—*
Meyers, Phillip H.; and Greene, Franklin R., 4,327,742, Cl. 128-736.000.
Greene, John L. Assembly for securing a rail to a supporting tie. 4,327,865, Cl. 238-310.000.
Greer, William B.: *See—*
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,328,061, Cl. 156-353.000.
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,328,062, Cl. 156-353.000.
Greinke, James; Matsunaga, Douglas; and Mosquera, Eric W., to Braner Enterprises. Slitter having pivotal multiple spaced pairs of arbors. 4,327,620, Cl. 83-479.000.
Greve, Heinz-Gunther: *See—*
Ulrich, Gebert; Thorwart, Werner; Komarek, Jaromir; Cartheuser, Carl; Popendiker, Kurt; and Greve, Heinz-Gunther, 4,328,227, Cl. 424-250.000.
Gries, Heinz; Pfeiffer, Heinrich; Speck, Ulrich; and Muetzel, Wolfgang, to Schering, A.G. Ionic 5-C-substituted 2,4,6-triiodoisophthalic acid derivatives. 4,328,202, Cl. 424-5.000.
Grimes, Terrence L.: *See—*
Swartz, Harold L.; Smith, Harry D.; and Grimes, Terrence L., 4,328,483, Cl. 340-347.0SY.
Grimmer, Johannes: *See—*
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Groshong, LeRoy E.; and Brawn, Ronald J. Methods and apparatus for intravenous therapy and hyperalimentation. 4,327,722, Cl. 128-214.400.
Grosse-Benne, Wilhelm; and Beermann, Paul, to Diehl GmbH & Co. Inserts for cutting charges. 4,327,642, Cl. 102-307.000.
Grossmann, Joachim; and Hoff, Heinz, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Multi-cylinder hot-gas engine with automatic air and gas supply. 4,327,551, Cl. 60-524.000.
Groth, Rolf, to BFG Glassgroup. Heat-reflecting panel having neutral-color outer appearance. 4,327,967, Cl. 350-258.000.
Gruber, Hermann: *See—*
Wellner, Wolfgang; Botta, Artur; and Gruber, Hermann, 4,328,330, Cl. 528-45.000.
Gruber Systems, Inc.: *See—*
Garasi, Louis A.; and Hayes, Ronald F., 4,328,179, Cl. 264-271.100.
Grudkowski, Thomas W., to United Technologies Corporation. Acoustic guided wave devices. 4,328,472, Cl. 333-141.000.
Grudkowski, Thomas W.: *See—*
Montress, Gary K.; and Grudkowski, Thomas W., 4,328,473, Cl. 333-154.000.
Grudzinskas, Charles V.: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,328,358, Cl. 560-121.000.
Gruppo Lepetit S.p.A.: *See—*
Cavalleri, Bruno; Pagani, Hermes; and Volpe, Giancarlo, 4,328,316, Cl. 435-253.000.
GTE Automatic Laboratories, Inc.: *See—*
Krzeptowski, Andrzej J., 4,327,472, Cl. 29-426.500.
GTE Laboratories Incorporated: *See—*
Fallier, Charles N., Jr.; and Proud, Joseph M., 4,328,446, Cl. 315-47.000.
Geller, William L., 4,328,434, Cl. 307-359.000.
Su, Sophia R.; and Natansohn, Samuel, 4,328,191, Cl. 423-54.000.
Gulf Research & Development Company: *See—*
Beach, David L.; and Zambelli, Adolfo, 4,328,123, Cl. 252-429.00B.
Innes, Robert A.; and Perrotta, Anthony J., 4,328,157, Cl. 549-258.000.
Innes, Robert A.; and Perrotta, Anthony J., 4,328,158, Cl. 54-258.000.
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,328,128, Cl. 252-441.000.
Guntert, Josef: *See—*
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Gupta, Alankar, to Boeing Company, The. Multiple function pneumatic thermostat. 4,327,864, Cl. 236-86.000.
Guselnikov, Leonid E.; Polyakov, Jury P.; Volnina, Elvira A.; and Nametkin, Nikolai S. 1,1,2,2-Tetramethyl-1,2-disilacyclobutane and method for preparing same. 4,328,350, Cl. 556-406.000.

Gut, Edwin: *See—*
Friedli, Hans; Gut, Edwin; and Aeschbach, Peter, 4,328,085, Cl. 204-245.000.

Gutow, Bernard S., to H. S. Crocker Co., Inc. Method and apparatus for forming windowed pressure sensitive labels. 4,328,057, Cl. 156-248.000.

Gutterman, Carl: *See—*
Steiner, Peter; Gutterman, Carl; and Dalton, Stuart M., 4,328,201, Cl. 423-569.000.

H. S. Crocker Co., Inc.: *See—*
Gutow, Bernard S., 4,328,057, Cl. 156-248.000.

Haas, Peter; Muller, Heinz; Seifert, Peter; Wagner, Kuno; Findeisen, Kurt; and Konig, Klaus, to Bayer Aktiengesellschaft. Dialkoxy-phosphonyl-N-alkyl-formic acid amides and their use as additives for the production of polyurethane foams which are capable of being flame laminated and high frequency welded. 4,328,321, Cl. 521-108.000.

Hackett, Peter A.; Nip, Wing S.; and Willis, Clive. Method of producing carbon-13 by multiphoton decomposition of C_3F_6. 4,328,078, Cl. 204-158.00R.

Haddad, James H.: *See—*
Daviduk, Nicholas; and Haddad, James H., 4,328,384, Cl. 585-469.000.

Haese, Egon; Willms, Rolf; and Schultheiss, Karl D., to Dr. C. Otto & Comp. G.m.b.H. Apparatus for the granulation of precipitation products formed from ammonium compounds. 4,328,189, Cl. 422-224.000.

Haesly, Barry F.; Harris, Richard D.; Dierschke, Eugene G.; and Hailey, Michael R., to Texas Instruments Incorporated. Snap-action fiber optic connector. 4,327,964, Cl. 350-96.200.

Hagedorn, Myrna L.: *See—*
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,328,109, Cl. 252-8.600.

Haggar Company: *See—*
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Off, Joseph W. A.; Early, Judson H.; and Greer, William B., 4,328,062, Cl. 156-353.000.

Hahn, Dowon: *See—*
Wasserman, David; Versfelt, Charles C.; Hahn, Dowon; and Wachter, Michael P., 4,328,204, Cl. 424-19.000.

Haikkala, Pekka O., to OY. Tampella AB. Apparatus for continuously grinding wood under pressure and continuously discharging groundwood. 4,327,870, Cl. 241-34.000.

Hailey, Michael R.: *See—*
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Halcon SD Group, Inc., The: *See—*
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Hall, Allen L., to Emery Industries, Inc. Process for the preparation of vinylcyclopropane derivatives. 4,328,169, Cl. 260-465.00K.

Hall, John B.: *See—*
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,327,749, Cl. 131-276.000.

Hall, Rowland G.: *See—*
Blumenkranz, James J.; and Hall, Rowland G., 4,327,895, Cl. 251-315.000.

Haller, Theodore R.; Jones, Marshall G.; Kliman, Gerald B.; and Tompkins, Russell E., to General Electric Company. Cutting amorphous metal by crystallization with a laser or electron beam. 4,328,411, Cl. 219-121.0EH.

Halliburton Company: *See—*
Dodge, Carl, 4,328,567, Cl. 367-32.000.

Halsall, James R.; Larcombe, Michael H. E.; Robertson, James R.; and Rogers, Mark A. M., to Imperial Chemical Industries Limited. Driverless vehicle autoguide by light signals and two directional detectors. 4,328,545, Cl. 364-424.000.

Hamai, Kyugo; Nakano, Tsuyoshi; and Uchida, Yoshimi, to Nissan Motor Co., Ltd. Exhaust gas recirculating device. 4,327,698, Cl. 123-568.000.

Hamanishi, Yoichi; Honma, Akiteru; Nihashi, Iwao; and Tanii, Seisuke, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushikikaisha Mori Tekkosho. Tube forming mill. 4,327,569, Cl. 72-239.000.

Hamilton Company: *See—*
Schultz, Harold R., 4,327,595, Cl. 73-864.120.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Selective printing apparatus. 4,327,640, Cl. 101-110.000.

Hampson, James, to Cordis Corporation. Catheter assembly. 4,327,735, Cl. 128-348.000.

Hanagasaki, Osamu: *See—*
Mochida, Yasunori; Nonaka, Terumoto; and Hanagasaki, Osamu, 4,327,623, Cl. 84-454.000.

Hancock, Mark W.: *See—*
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Hanke, Reinhart; and Treso, Bertalan, to Voest-Alpine Aktiengesellschaft. Process of demulsifying and converting emulsions of oils, greases and fats. 4,328,104, Cl. 210-603.000.

Hanover, George: *See—*
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Hans, Waldemar: *See—*
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Hansen, Gerald D., to Atlantic Richfield Company. Cooling water corrosion inhibitor. 4,328,180, Cl. 422-15.000.

Hansen, Paul L., to Beckman Instruments, Inc. Optically coupled serial communication bus. 4,328,586, Cl. 375-36.000.

Hanson, Bruce L.; and Wolvek, Sidney, to Datascope Corp. Apparatus and method for the percutaneous introduction of intra-aortic balloons into the human body. 4,327,709, Cl. 128-1.00D.

Hanssle, Peter, to Chemische Werke Huels, A.G. Process for the preparation of secondary and tertiary 2-carboxyethyl- and carboxymethylphosphines and their salts, as well as the use thereof. 4,328,163, Cl. 260-439.00R.

Harada, Susumu, to Nippondenso Co. Ltd. Fuel supply system for an internal combustion engine. 4,327,682, Cl. 123-326.000.

Harada, Yusuke: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.

Harari, Eliyahou. Non-volatile eprom with increased efficiency. 4,328,565, Cl. 365-185.000.

Harari, Eliyahou: *See—*
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Hardgrave, Everett J., Jr.: *See—*
Bell, Alfred J.; Polk, Albert S., Jr.; Cronvich, Lester; and Hardgrave, Everett J., Jr., 4,327,886, Cl. 244-3.290.

Harding, John C., Jr., to General Eastern Instruments Corporation. Capacitor storage circuit. 4,328,455, Cl. 320-1.000.

Harigae, Shunji: *See—*
Yoshida, Tomio; Nagashima, Michiyoshi; Harigae, Shunji; Ichinose, Makoto; and Wakami, Noboru, 4,328,506, Cl. 346-108.000.

Harlow, Nigel: *See—*
Smith, David K.; Harlow, Nigel; Maxfield, Samuel W.; and Mitchell, James, 4,327,631, Cl. 99-277.200.

Harman, John N., III: *See—*
Neti, Radhakrishna M.; and Harman, John N., III, 4,328,082, Cl. 204-195.00G.

Harmon, James V.; and Kyllo, Roger A., to Rockwell International Corporation. Adaptive HF communication system. 4,328,581, Cl. 371-8.000.

Harrar, Jackson E.; Lorensen, Lyman E.; and Locke, Frank E., to United States of America, Energy. Method for inhibiting silica precipitation and scaling in geothermal flow systems. 4,328,106, Cl. 210-700.000.

Harris, Lawrence A., to General Electric Company. Method of making a catalytic electrode. 4,328,080, Cl. 204-192.0EC.

Harris, Lee M. Light-beam-projecting apparatus. 4,327,975, Cl. 353-50.000.

Harris, Richard D.: *See—*
Haesly, Barry F.; Harris, Richard D.; Dierschke, Eugene G.; and Hailey, Michael R., 4,327,964, Cl. 350-96.200.

Harris, Robert L.: *See—*
DeLoach, John R.; Harris, Robert L.; Ihler, Garret M.; and Mayer, Richard T., 4,327,710, Cl. 128-1.00R.

Harrison, Kenneth J., to Minnesota Mining and Manufacturing Company. Liquid crystal compositions for multiplexed displays. 4,328,116, Cl. 252-299.630.

Harsch, Klaus; and Schulzke, Peter, to Robert Bosch GmbH. Apparatus for controlling the de-excitation time of electromagnetic devices, in particular electromagnetic injection valves in internal combustion engines. 4,327,692, Cl. 123-490.000.

Hartford, Thomas W.: *See—*
Barman, Alan W.; and Hartford, Thomas W., 4,328,547, Cl. 364-431.090.

Hartke, David J.: *See—*
Brown, Peter W.; DuBois, Chester G.; Hartke, David J.; and Hunt, Paul R., 4,327,770, Cl. 137-614.050.

Hartmann, Heinrich: *See—*
Lehner, August; Hartmann, Heinrich; Bachmann, Rudolf; Balz, Werner; and Kohl, Albert, 4,328,282, Cl. 428-425.900.

Hasegawa, Akio: *See—*
Horiguchi, Sadayuki; Hasegawa, Akio; and Sakamoto, Hajimu, 4,328,314, Cl. 435-212.000.

Hashimoto, Shinichiro; and Nagabushi, Hiromi, to Nippon Telegraph & Telephone Public Corporation. Voice band multiplex transmission system. 4,328,579, Cl. 370-111.000.

Hashimoto, Shintaro; and Tanimoto, Akira, to Sharp Kabushiki Kaisha. Means for displaying at least two different words and for providing independent pronunciations of these words. 4,328,562, Cl. 364-900.000.

Hashimoto, Tadakatsu: *See—*
Nakajima, Yukihiko; Ohkubo, Mitsuru; Hashimoto, Tadakatsu; and Nakamura, Shigeki, 4,327,797, Cl. 160-168.00R.

Hatashita, Hiroshi: *See—*
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Hattori, Tadashi: *See—*
Akutagawa, Kenichi; Yoshida, Hitoshi; Hattori, Tadashi; Takata, Akira; and Fukuda, Tamotsu, 4,327,685, Cl. 123-402.000.

Hattori, Tetsuo. Rotational mechanism disposed within fluid passageway. 4,327,815, Cl. 181-225.000.

Haubner, Georg; Meier, Werner; Wesemeyer, Jurgen; and Schrumpf, Hans, to Robert Bosch GmbH. Timing system for process control in internal combustion engines. 4,327,687, Cl. 123-416.000.

Haugwitz, Rudiger D.; and Maurer, Barbara V., to E. R. Squibb & Sons, Inc. Substituted phenylguanidines and method. 4,328,241, Cl. 424-300.000.
Havlice, James F.: *See—*
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Haworth, William S.: *See—*
Bellhouse, Brian J.; and Haworth, William S., 4,328,102, Cl. 210-321.400.
Hayashibara, Ken: *See—*
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Hayes, Larry J.; and Reddick, Keith L., to Recognition Equipment Inc. Process for producing fluorescent resin for ink jet printers. 4,328,332, Cl. 528-296.000.
Hayes, Ronald F.: *See—*
Garasi, Louis A.; and Hayes, Ronald F., 4,328,179, Cl. 264-271.100.
Heeger, Stephen E., to AMF Incorporated. Sequence controller with microprocessor. 4,328,539, Cl. 364-144.000.
Heiba, El-Ahmadi I.; and Dessau, Ralph M., to Mobil Oil Corporation. Manufacture of gamma halogen substituted adducts. 4,328,363, Cl. 560-82.000.
Heilen, Gerd: *See—*
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Heilweil, Emanuel: *See—*
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Heimberger, Werner: *See—*
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Heinecke, Rudolf A. H.; and Stern, Ronald C., to ITT Industries, Inc. Metallizing semiconductor devices. 4,328,261, Cl. 427-91.000.
Helmholtz-Institut fur Biomedizinische Technik: *See—*
Scheiwe, Max W.; and Rau, Gunther, 4,327,799, Cl. 165-2.000.
Hemmerich, Johann, to Cyclotron Corporation, The. Method for pumping impurities, especially noble gases, from hydrogen or mixtures of hydrogen and its isotopes. 4,328,079, Cl. 204-192.0SP.
Henderson, Alva E., to Texas Instruments Incorporated. Speech synthesis system with variable interpolation capability. 4,328,395, Cl. 179-1.0SM.
Henkel Corporation: *See—*
Rogier, Edgar R., 4,328,371, Cl. 564-506.000.
Henkel, Kurt: *See—*
Bittner, Friedrich; Heimberger, Werner; Henkel, Kurt; Kriebitzsch, Norbert; Petzold, Martin; and Puschner, Kurt, 4,328,010, Cl. 55-51.000.
Hennessy Industries, Inc.: *See—*
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Henry Balfour & Co.: *See—*
Smith, David K.; Harlow, Nigel; Maxfield, Samuel W.; and Mitchell, James, 4,327,631, Cl. 99-277.200.
Henson, Ralph B.; and Martin, James L., to Caterpillar Tractor Co. Unit fuel pump-injector with overfuel capability and timing retardation. 4,327,694, Cl. 123-500.000.
Herbst, Kurt: *See—*
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Herendeen, Carl E.: *See—*
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Hermann nee Szente, Ilona: *See—*
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Hertel, Otto; Scharf, Emil; and Melzer, Jaroslav, to BASF Aktiengesellschaft. Preparation of water-soluble condensates and their use as crosslinking agents for the preparation of papermaking aids. 4,328,142, Cl. 523-417.000.
Hess, LaVerne D.: *See—*
Yaron, Giora; Harari, Eliyahou; Hess, LaVerne D.; and Ma, Yueh Y., 4,327,477, Cl. 29-576.00B.
Hesston Corporation: *See—*
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Hetzel, Eckhard: *See—*
Kilpper, Gerhard; Grimmer, Johannes; Tonne, Peter; Horn, Hans C.; and Hetzel, Eckhard, 4,328,339, Cl. 544-94.000.
Heuck, Claus C.: *See—*
Horn, Dieter; Lueddecke, Erik; and Heuck, Claus C., 4,328,000, Cl. 23-230.00B.
Hevenor, Charles M.: *See—*
Gerber, Heinz J.; and Hevenor, Charles M., 4,327,615, Cl. 83-49.000.
Heyke, Klaus; Schmidt, Gunter; and Ragaly, Istvan, to Robert Bosch GmbH. Two-element semiconductor diode rectifier assembly structure. 4,328,512, Cl. 357-76.000.
Heymes, Rene: *See—*
Vignau, Michel; and Heymes, Rene, 4,328,225, Cl. 424-246.000.
Hickel, Gerhard, to Braun, Aktiengesellschaft. Rotary ignition system for a catalytically heated curling device. 4,327,752, Cl. 132-37.00R.
Hierholzer, Frank J., Jr.; Ancona, John A.; and Shelton, Gerald L., to Emerson Electric Co. Silicon carbide igniters. 4,328,529, Cl. 361-266.000.
Higashi, Ryozi: *See—*
Takaoka, Saburo; Higashi, Ryozi; and Hirano, Hiroyuki, 4,328,465, Cl. 330-151.000.
High, Leroy B.: *See—*
Conley, Richard A.; Lam, Margaret M.; and High, Leroy B., 4,328,342, Cl. 546-153.000.
Higuchi, Masaaki: *See—*
Suzuki, Gyoichi; Shimotsuma, Teruo; Higuchi, Masaaki; Sugawara, Tsunenori; and Yano, Takeshi, 4,327,899, Cl. 266-193.000.
Higuchi, Mitsuo: *See—*
Yanagida, Yoshitsugu; Higuchi, Mitsuo; Ito, Yoshiaki; Nakaji, Shigeru; and Ehiro, Syogo, 4,327,466, Cl. 29-90.00R.
Higuchi, Yoshio, to Daito Sound Co., Ltd. Full charge detection circuit for a battery. 4,328,457, Cl. 320-36.000.
Hildreth, Michael S. Permanent wave accessory. 4,327,754, Cl. 132-40.000.
Hill, Phillip D.: *See—*
Tusinski, Joseph; Hill, Phillip D.; and Lund, Clarence J., 4,328,060, Cl. 156-344.000.
Himes, Roger. Solar tracking mechanism. 4,328,417, Cl. 250-203.00R.
Hinman, Mark H.; and Latimer, John P., to Deepsea Ventures, Inc. Remotely steerable dredge vehicle. 4,327,505, Cl. 37-54.000.
Hirakawa, Tadashi; and Satou, Hiroshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for guiding web-like material. 4,327,854, Cl. 226-95.000.
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Takaoka, Saburo; Higashi, Ryozi; and Hirano, Hiroyuki, 4,328,465, Cl. 330-151.000.
Hirata, Takeyuki: *See—*
Tozaki, Yasuyuki; Ueda, Minoru; Hirata, Takeyuki; and Anezaki, Syoji, 4,328,030, Cl. 75-60.000.
Hirata, Yasushi: *See—*
Ogawa, Masaki; Hirata, Yasushi; and Ikegami, Mikihiko, 4,328,133, Cl. 524-505.000.
Hiromitsu, Hirayama, to TDK Electronics Co., Ltd. Variable leakage transformer and control circuit therefore. 4,328,458, Cl. 323-251.000.
Hirono, Takashi: *See—*
Yamanaka, Koichi; Yamasaki, Ryuzo; Sakai, Yoshiharu; and Hirono, Takashi, 4,327,469, Cl. 29-407.000.
Hiroshi, Matsumoto: *See—*
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Hitachi, Ltd.: *See—*
Furihato, Makoto; Machida, Toyotaka; and Ikemura, Yuichi, 4,328,513, Cl. 358-19.000.
Matsuoka, Shigeru; Tsubaki, Toshio; Tokunaga, Takeshi; Yonekura, Seiji; Nakamura, Kenji; and Suzuki, Mituo, 4,328,540, Cl. 364-167.000.
Nagashima, Toshio; Saitoh, Takeshi; Hatashita, Hiroshi; and Shinagawa, Mitsuhisa, 4,328,531, Cl. 361-401.000.
Nakashima, Akio; and Okamoto, Yoshimasa, 4,328,514, Cl. 358-33.000.
Okuyama, Toshiaki; and Nagase, Hiroshi, 4,328,454, Cl. 318-803.000.
Watanabe, Shutoku, 4,328,517, Cl. 358-191.100.
Hitachi Shipbuilding and Engineering Co., Ltd.: *See—*
Kimoto, Yasuo; Tamiya, Katsunori; Honda, Shoichi; Maehata, Hidehiko; and Kamada, Hiroshi, 4,328,083, Cl. 204-217.000.
Ho, Chung W.: *See—*
Bajorek, Christopher H.; Chance, Dudley A.; Ho, Chung W.; and Thompson, David A., 4,328,530, Cl. 361-308.000.
Hobart Corporation: *See—*
Voorhees, John E.; and Johnson, Thomas M., 4,327,621, Cl. 83-820.000.
Hobel, Daniel: *See—*
Belcher, Paul E.; and Hobel, Daniel, 4,328,482, Cl. 340-310.00A.
Hoda, Syed N.: *See—*
Beall, George H.; Hoda, Syed N.; and Waldron, Richard W., 4,328,299, Cl. 430-13.000.
Hoechst Aktiengesellschaft: *See—*
Michel, Wolfgang; and Becker, Reinhold, 4,327,777, Cl. 138-118.100.
Ulrich, Gebert; Thorwart, Werner; Komarek, Jaromir; Cartheuser, Carl; Popendiker, Kurt; and Greve, Heinz-Gunther, 4,328,227, Cl. 424-250.000.
Hoff, Heinz: *See—*
Grossmann, Joachim; and Hoff, Heinz, 4,327,551, Cl. 60-524.000.
Hoffman, Allan C. Tennis ball. 4,327,912, Cl. 273-61.00R.
Hoffmann-La Roche Inc.: *See—*
Schmidt, Dieter, 4,328,222, Cl. 424-244.000.
Hofmann, Eberhard: *See—*
Reiff, Karl; Hofmann, Eberhard; and Guntert, Josef, 4,327,699, Cl. 123-568.000.
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, to Owens-Corning Fiberglas Corporation. Method and apparatus for drying glass batch pellets. 4,328,016, Cl. 65-2.000.
Holden, Homer N.; and Sumrall, Reese, to Dayco Corporation. Method of making pedestal liner for a railway vehicle. 4,327,474, Cl. 29-149.5NM.
Hollandsche Aanneming Maatschappij B.V.: *See—*
Volbeda, Johan H., 4,327,507, Cl. 37-67.000.
Holmes, Maurice F., to Xerox Corporation. Electrostatically assisted retard feeder method and apparatus. 4,327,904, Cl. 271-35.000.
Holmes, Neville R.: *See—*
Hughes, Eric; Carlisle, Denis R.; and Holmes, Neville R., 4,327,547, Cl. 60-39.46P.

Holmes, Richard, to Dawson Carbide Industries, Inc. Coaxial workpiece arranger for rotary work holders of contour turning machines. 4,327,902, Cl. 269-6.000.
Home Oil Company Limited: *See—*
Seguin, Herb J. J., 4,328,523, Cl. 361-56.000.
Honath, Harold F.: *See—*
Patil, Ulhas S.; Honath, Harold F.; and Murphy, John C., 4,327,554, Cl. 62-45.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Obata, Masatoshi; and Satoh, Norio, 4,327,700, Cl. 123-571.000.
Honda, Shoichi: *See—*
Kimoto, Yasuo; Tamiya, Katsunori; Honda, Shoichi; Maehata, Hidehiko; and Kamada, Hiroshi, 4,328,083, Cl. 204-217.000.
Honda, Takeshi: *See—*
Finkelstein, Richard A.; and Honda, Takeshi, 4,328,209, Cl. 424-92.000.
Honeywell Inc.: *See—*
Kompelien, Arlon D., 4,328,528, Cl. 361-211.000.
Landis, William R., 4,328,527, Cl. 361-175.000.
Spethmann, Donald H., 4,327,559, Cl. 62-179.000.
Thue, Baard H., 4,328,495, Cl. 343-17.2PC.
Honeywell Information Systems Inc.: *See—*
Leger, Laurie J., 4,327,835, Cl. 211-41.000.
Honig, Gunter: *See—*
Dilger, Peter; Honig, Gunter; and Kauff, Helmut, 4,328,526, Cl. 361-154.000.
Honma, Akiteru: *See—*
Hamanishi, Yoichi; Honma, Akiteru; Nihashi, Iwao; and Tanii, Seisuke, 4,327,569, Cl. 72-239.000.
Hope, Henry F.; and Hope, Stephen F. Drive mechanism for photographic film and paper processing machine. 4,327,989, Cl. 354-322.000.
Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 4,327,989, Cl. 354-322.000.
Horiba Instruments Incorporated: *See—*
D'Angelo, Severino, 4,327,578, Cl. 73-117.000.
Horiguchi, Sadayuki; Hasegawa, Akio; and Sakamoto, Hajimu, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing plasminogen activator. 4,328,314, Cl. 435-212.000.
Horlbeck, Gernot; and Burzin, Klaus, to Chemische Werke Huels, A.G. High-molecular weight linear polyesters and a process for preparing them. 4,328,059, Cl. 156-332.000.
Horn, Dieter; Lueddecke, Erik; and Heuck, Claus C., to BASF Aktiengesellschaft. Quantitative determination of the surface charge of serum lipoproteins. 4,328,000, Cl. 23-230.00B.
Horn, Hans C.: *See—*
Kilpper, Gerhard; Grimmer, Johannes; Tonne, Peter; Horn, Hans C.; and Hetzel, Eckhard, 4,328,339, Cl. 544-94.000.
Hornung, Elmer H.: *See—*
Cooper, James J., Jr.; Reinhardt, William C.; and Hornung, Elmer H., 4,327,957, Cl. 339-272.00R.
Horodysky, Andrew G.; Kaminski, Joan M.; Ashjian, Henry; and Gawel, Henry A., to Mobil Oil Corporation. Friction reducing additives and compositions thereof. 4,328,113, Cl. 252-49.600.
Horrobin, David F.; and Lieb, Julian. Manic-depressive illnesses. 4,328,243, Cl. 424-301.000.
Hoskins, Nathan D. Can opener. 4,327,490, Cl. 30-408.000.
Hotta, Tomio: *See—*
Matsuo, Katsuharu; and Hotta, Tomio, 4,327,502, Cl. 34-43.000.
Howard, H. Gordon. Aerodynamic propeller-driven land vehicle. 4,327,808, Cl. 180-7.00P.
Howden, Harry, to U.S. Philips Corporation. Method of making a master replicating tool. 4,327,606, Cl. 76-107.00R.
Howland, Leland L.; Grant, Hendrie J.; and Taylor, David H., to Thermo King Corporation. Unloadable transport refrigeration unit control. 4,327,558, Cl. 62-160.000.
Huang, Yun-Yang, to Ethyl Corporation. Catalyst for making dimethyl ether and methanol from synthesis gas. 4,328,129, Cl. 252-465.000.
Hubert, Peter: *See—*
Roselius, Wilhelm; Vitzthum, Otto; and Hubert, Peter, 4,328,255, Cl. 426-417.000.
Huggins, Dale K.: *See—*
Beckstead, Leo W.; and Huggins, Dale K., 4,328,190, Cl. 423-54.000.
Hughes Aircraft Co.: *See—*
Yaron, Giora; Harari, Eliyahou; Hess, LaVerne D.; and Ma, Yueh Y., 4,327,477, Cl. 29-576.00B.
Hughes, David E., to PPG Industries, Inc. Melting glass with reduced NO_x emissions. 4,328,020, Cl. 65-27.000.
Hughes, Donald W. K.; Myers, Ronald W.; and Weidler, Charles H., to AMP Incorporated. Connector jack. 4,327,958, Cl. 339-276.0SF.
Hughes, Eric; Carlisle, Denis R.; and Holmes, Neville R., to Rolls-Royce Limited. Fuel injectors. 4,327,547, Cl. 60-39.46P.
Hughes, Robert G., to Continental Group of Canada Ltd., The. Display carton and blank therefor. 4,327,829, Cl. 206-193.000.
Huizinga, John S.; and Stevens, John, to Minnesota Mining and Manufacturing Company. Suppression of spark discharges from negatively triboelectrically charged surfaces. 4,328,280, Cl. 428-411.000.
Hunt, Paul R.: *See—*
Brown, Peter W.; DuBois, Chester G.; Hartke, David J.; and Hunt, Paul R., 4,327,770, Cl. 137-614.050.
Hurt, Alfred A. Square adapter for level. 4,327,501, Cl. 33-465.000.
Hutcheson, William F., to Rossville Yarn Processing Company. Process of producing simulated "Berber" yarn. 4,327,464, Cl. 28-218.000.
Hyatt, John A.; and McCombs, Charles A., to Eastman Kodak Company. Process for preparing 9,11-unsaturated steroidal compound from the corresponding saturated steroidal compound. 4,328,162, Cl. 260-397.450.
Hydrowatt Systems Limited: *See—*
Frey, Bernhard, 4,327,629, Cl. 92-86.500.
Ichinohe, Shoji: *See—*
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; Yamamoto, Yasushi; and Ichinohe, Shoji, 4,328,216, Cl. 424-184.000.
Ichinose, Makoto: *See—*
Yoshida, Tomio; Nagashima, Michiyoshi; Harigae, Shunji; Ichinose, Makoto; and Wakami, Noboru, 4,328,506, Cl. 346-108.000.
Ichioka, Atushi: *See—*
Yanai, Noboru; Komori, Toshiyuki; Ichioka, Atushi; and Imooka, Masanori, 4,328,488, Cl. 340-578.000.
ICN Pharmaceuticals, Inc.: *See—*
Robins, Roland K.; and Rousseau, Robert J., 4,328,336, Cl. 536-28.000.
ICOMAG Trust Reg.: *See—*
Bertschi, Ernst, 4,327,753, Cl. 132-40.000.
Ideal Toy Corporation: *See—*
Becker, James R.; Cooper, Julius; and Kuriloff, Fredric M., 4,327,920, Cl. 273-238.000.
Cooper, Julius; and Ensmann, Burt W., 4,327,519, Cl. 46-262.000.
Idota, Yoshio; and Yamada, Minoru, to Fuji Photo Film Co., Ltd. Processing method for color photographic materials. 4,328,306, Cl. 430-393.000.
Ihler, Garret M.: *See—*
DeLoach, John R.; Harris, Robert L.; Ihler, Garret M.; and Mayer, Richard T., 4,327,710, Cl. 128-1.00R.
Iinuma, Kazuhiro: *See—*
Usuba, Takahiro; Iinuma, Kazuhiro; Suzuki, Soichi; and Abe, Yukito, 4,328,490, Cl. 340-715.000.
Ikeda, Tomoaki: *See—*
Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, 4,328,304, Cl. 430-331.000.
Ikeda, Yoshiaki: *See—*
Sotomura, Mikio; Iwamoto, Seiichi; Sawada, Teruo; Inoue, Shintaro; Suzuki, Akira; and Ikeda, Yoshiaki, 4,328,218, Cl. 424-195.000.
Ikegami, Mikihiko: *See—*
Ogawa, Masaki; Hirata, Yasushi; and Ikegami, Mikihiko, 4,328,133, Cl. 524-505.000.
Ikemura, Yuichi: *See—*
Furihato, Makoto; Machida, Toyotaka; and Ikemura, Yuichi, 4,328,513, Cl. 358-19.000.
Imagawa, Hitoshi: *See—*
Kawaguchi, Masaharu; Shiraishi, Yoshikatu; Maruyama, Kazuhiro; Imagawa, Hitoshi; and Kaneko, Yoshimasa, 4,328,398, Cl. 179-84.0VF.
Imai, Iwao; and Sone, Masazumi, to Nissan Motor Co., Ltd. Plasma jet ignition system with noise suppressing arrangement. 4,327,702, Cl. 123-620.000.
Imai, Shoji: *See—*
Kiuchi, Seiji; and Imai, Shoji, 4,328,066, Cl. 156-506.000.
Imai, Shuichi: *See—*
Isobe, Minoru; Ishii, Etumi; Imai, Shuichi; Kodama, Tadasi; and Ohara, Wataru, 4,327,856, Cl. 226-162.000.
Imooka, Masanori: *See—*
Yanai, Noboru; Komori, Toshiyuki; Ichioka, Atushi; and Imooka, Masanori, 4,328,488, Cl. 340-578.000.
Imperial Chemical Industries Limited: *See—*
Halsall, James R.; Larcombe, Michael H. E.; Robertson, James R.; and Rogers, Mark A. M., 4,328,545, Cl. 364-424.000.
Inaba, Shosei; and Okada, Toshiro, to Victor Company of Japan, Limited. Disk record container. 4,327,831, Cl. 206-310.000.
Ingalls, James E. Automatic fruit labeler. 4,328,063, Cl. 156-361.000.
Ingersoll-Rand Company: *See—*
Arya, Satya P., 4,327,806, Cl. 173-131.000.
Ingles, Owen G.; and Lim, Nam, to Unisearch Limited. Construction of building materials. 4,328,035, Cl. 106-84.000.
Innes, Robert A.; and Perrotta, Anthony J., to Gulf Research & Development Company. Production of maleic anhydride. 4,328,157, Cl. 549-258.000.
Innes, Robert A.; and Perrotta, Anthony J., to Gulf Research & Development Company. Production of maleic anhydride. 4,328,158, Cl. 54-258.000.
Inoue, Kanji. Balloon catheter. 4,327,736, Cl. 128-349.00B.
Inoue, Shintaro: *See—*
Sotomura, Mikio; Iwamoto, Seiichi; Sawada, Teruo; Inoue, Shintaro; Suzuki, Akira; and Ikeda, Yoshiaki, 4,328,218, Cl. 424-195.000.
Institute of Gas Technology: *See—*
Sammells, Anthony F.; and Powers, Michael J., 4,328,287, Cl. 429-15.000.
Institute of Technical Sciences of the Serbian Academy of Sci. & Art., The: *See—*
Zrnic, Nenad; and Bilen, Branislav, 4,328,093, Cl. 209-3.000.
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Witek, Stanislaw; Grobelny, Damian; Gorska-Poczopko, Jadwiga; Bakuniak, Edmund; Bakuniak, Irena; and Ptaszkowska, Janina, 4,328,226, Cl. 424-248.400.
Inter-American Transport Equipment Company: *See—*
Fowler, Larry G., 4,327,945, Cl. 298-11.000.

Interelectric Aktiengesellschaft: *See—*
Futterer, Bodo; Mayer, Jurgen; and Fritschy, Hugo, 4,327,479, Cl. 29-596.000.
International Business Machines Corporation: *See—*
Allen, Jay W.; and Granata, Peter J., 4,328,525, Cl. 361-152.000.
Bajorek, Christopher H.; Chance, Dudley A.; Ho, Chung W.; and Thompson, David A., 4,328,530, Cl. 361-308.000.
Baldwin, Harry L.; Bergschneider, Beryl D.; Chamoff, Martin E.; Miller, Irving L.; Piller, Don W.; Robinett, Max J.; and Thorson, Donald L., 4,328,544, Cl. 364-405.000.
Brickman, Norman F.; and McDonald, Earl J., 4,328,543, Cl. 364-200.000.
Case, Jerry R., 4,328,435, Cl. 307-466.000.
Convis, Danny B.; Glickman, David; and Rosenbaum, Walter S., 4,328,561, Cl. 364-900.000.
Nussbaumer, Henri J., 4,328,555, Cl. 364-726.000.
Schuenemann, Claus, 4,328,560, Cl. 364-900.000.
International Flavors & Fragrances Inc.: *See—*
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,327,749, Cl. 131-276.000.
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,328,109, Cl. 252-8.600.
Sprecker, Mark A., 4,328,206, Cl. 424-84.000.
International Harvester Company: *See—*
Swanson, William C., 4,327,540, Cl. 56-11.900.
International Measurement & Control Co.: *See—*
Dybel, Frank R.; and MacDonald, Kenneth, 4,327,591, Cl. 73-855.000.
International Nickel Co., Inc., The: *See—*
Crosby, Jeffrey N., 4,328.286, Cl. 428-636.000.
Fisher, Gordon L.; and Makely, Joseph V., 4,328,076, Cl. 204-14.00R.
International Standard Electric Corporation: *See—*
Black, Philip W., 4,327,965, Cl. 350-96.330.
Eaton, Douglas J., 4,328,415, Cl. 235-451.000.
International Telephone and Telegraph Corporation: *See—*
Cooper, James J., Jr.; Reinhardt, William C.; and Hornung, Elmer H., 4,327,957, Cl. 339-272.00R.
Intertech Zeichengerate Genther Partes KG: *See—*
Partes, Gunther, 4,327,491, Cl. 33-27.00B.
Inticbar, Lutz; Kuter, Heinrich; and Weghaupt, Erich, to Kraftwerk Union Aktiengesellschaft. Superconductive exciter winding for a turbogenerator rotor. 4,328,437, Cl. 310-52.000.
Iowa State University Research Foundation Inc.: *See—*
Demirel, Turgut; Lee, Dah-Yinn; and Boybay, Mustafa, 4,328,037, Cl. 106-85.000.
Ipos Gesellschaft fur integriert Prothesen-Entwicklung und orthopadietechnischen Service GmbH & Co., KG: *See—*
Prahl, Jan; and Gelbenegger, Franz, 4,327,727, Cl. 128-283.000.
Irii, Shinsuke: *See—*
Iwasaki, Hiroshi; and Irii, Shinsuke, 4,328,119, Cl. 252-316.000.
Irons, Brian P. G., to Lucas Industries Ltd. Method of making a lamp assembly. 4,327,486, Cl. 29-847.000.
Irving, Donald E., to Motorola Inc. Band frequency indicating system. 4,327,660, Cl. 116-257.000.
Isaka, Yoshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle exhaust systems. 4,327,811, Cl. 180-219.000.
Ishibashi, Kazuhisa: *See—*
Mori, Fumio; and Ishibashi, Kazuhisa, 4,327,840, Cl. 215-349.000.
Ishida, Nakao: *See—*
Koide, Yoshio; Edo, Kiyoto; and Ishida, Nakao, 4,328,212, Cl. 424-118.000.
Ishida, Tokuji; and Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Camera diaphragm control device for flash photography. 4,327,978, Cl. 354-41.000.
Ishii, Etumi: *See—*
Isobe, Minoru; Ishii, Etumi; Imai, Shuichi; Kodama, Tadasi; and Ohara, Wataru, 4,327,856, Cl. 226-162.000.
Ishii, Kazuo: *See—*
Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, 4,328,304, Cl. 430-331.000.
Ishii, Keizou: *See—*
Izumi, Minao; Sobata, Tamotsu; Ishikura, Shinichi; and Ishii, Keizou, 4,328,143, Cl. 523-412.000.
Ishii, Yasunobu: *See—*
Asai, Kazuyoshi; Ishii, Yasunobu; and Kurumada, Katsuhiko, 4,327,475, Cl. 29-571.000.
Ishikura, Shinichi: *See—*
Izumi, Minao; Sobata, Tamotsu; Ishikura, Shinichi; and Ishii, Keizou, 4,328,143, Cl. 523-412.000.
Ishizuka Glass Co., Ltd.: *See—*
Nakayama, Haruhiko; Uchida, Kiyoshi; Sugiyama, Masahiko; and Konishi, Hiromu, 4,327,820, Cl. 188-370.000.
Isobe, Minoru; Ishii, Etumi; Imai, Shuichi; Kodama, Tadasi; and Ohara, Wataru, to Oki Electric Industry Co., Ltd.; and Nippon Telegraph & Telephone Public Corp. Paper transfer system in a printer. 4,327,856, Cl. 226-162.000.
Itaya, Nobushige: *See—*
Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, 4,328,166, Cl. 260-453.0AR.
Itek Corporation: *See—*
Oakley, William S., 4,328,576, Cl. 370-3.000.
Ito, Hisakatsu: *See—*
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, 4,328,307, Cl. 435-80.000.
Ito, Koichi: *See—*
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; Yamamoto, Yasushi; and Ichinohe, Shoji, 4,328,216, Cl. 424-184.000.
Ito, Tadashi: *See—*
Yamamichi, Masayoshi; Suzuki, Masayuki; Murakami, Hiroyasu; and Ito, Tadashi, 4,327,982, Cl. 354-156.000.
Ito, Yoshiaki: *See—*
Yanagida, Yoshitsugu; Higuchi, Mitsuo; Ito, Yoshiaki; Nakaji, Shigeru; and Ehiro, Syogo, 4,327,466, Cl. 29-90.00R.
ITT Industries, Inc.: *See—*
Heinecke, Rudolf A. H.; and Stern, Ronald C., 4,328,261, Cl. 427-91.000.
Iwai, Hiroshi; and Nishi, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing semiconductor devices. 4,327,476, Cl. 29-571.000.
Iwamoto, Seiichi: *See—*
Sotomura, Mikio; Iwamoto, Seiichi; Sawada, Teruo; Inoue, Shintaro; Suzuki, Akira; and Ikeda, Yoshiaki, 4,328,218, Cl. 424-195.000.
Iwasa, Tomoyuki: *See—*
Iwata, Mitsuo; Wada, Hajime; Iwasa, Tomoyuki; and Tsuchino, Kunio, 4,328,520, Cl. 360-73.000.
Iwasaki, Akio: *See—*
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, 4,328,307, Cl. 435-80.000.
Iwasaki, Hiroshi; and Irii, Shinsuke, to Kanzaki Paper Manufacturing Co., Ltd. Method of making microcapsules. 4,328,119, Cl. 252-316.000.
Iwata, Mitsuo; Wada, Hajime; Iwasa, Tomoyuki; and Tsuchino, Kunio, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Tape transport device. 4,328,520, Cl. 360-73.000.
Izumi, Minao; Sobata, Tamotsu; Ishikura, Shinichi; and Ishii, Keizou, to Nippon Paint Company, Ltd. Aqueous coating composition. 4,328,143, Cl. 523-412.000.
Izzo, Michael J. Door knob shield. 4,327,663, Cl. 118-505.000.
J. I. Case Company: *See—*
Youngers, Stephen A., 4,327,508, Cl. 37-86.000.
J. M. Voith GmbH: *See—*
Ortner, Herbert; and Cechovsky, Werner, 4,328,095, Cl. 209-169.000.
J. Ray McDermott & Co., Inc.: *See—*
Dudley, Jerry E.; and Thornton, Carrol G., 4,328,416, Cl. 250-202.000.
Jachna, Waclaw: *See—*
Jedo, Antoni; and Jachna, Waclaw, 4,327,827, Cl. 198-771.000.
Jackson, Charlie M., Jr.; Dollyhigh, Samuel M.; and Shaw, David S., to United States of America, National Aeronautics and Space Administration. Metric half-span model support system. 4,327,581, Cl. 73-147.000.
Jacoboni, Charles: *See—*
Miranday, Jean-Pierre; Jacoboni, Charles; and de Pape, Robert, 4,328,318, Cl. 501-40.000.
Jager, Walter: *See—*
Fischer, Reimer; Jager, Walter; and von Waclawiczek, Herbert, 4,328,009, Cl. 48-202.000.
Jakobs, Willy, to Klockner-Humboldt-Deutz AG. Worm centrifuge. 4,327,862, Cl. 233-7.000.
James, Jeffrey S. Weight lifting bar apparatus for exercising biceps. 4,327,908, Cl. 272-119.000.
Janome Sewing Machine Co. Ltd.: *See—*
Winsel, August, 4,328,291, Cl. 429-101.000.
Jarzynski, Jacek: *See—*
Trott, W. James; and Jarzynski, Jacek, 4,328,569, Cl. 367-103.000.
Jedo, Antoni; and Jachna, Waclaw, to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag". Vibratory feeder. 4,327,827, Cl. 198-771.000.
Jennings, Thomas A., to T. A. Jennings Associates, Inc. Method and apparatus for determining the low temperature characteristics of materials. 4,327,573, Cl. 374-10.000.
Jensen, Richard C., to Carrier Corporation. Erosion probe having inductance sensor for monitoring erosion of a turbomachine component. 4,328,462, Cl. 324-229.000.
Jinnai, Koichiro, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,328,505, Cl. 346-75.000.
John Wyeth & Brother Limited: *See—*
Ward, Terence J.; and White, John F., 4,328,232, Cl. 424-258.000.
Johns Hopkins University, The: *See—*
Bueding, Ernest, 4,328,215, Cl. 424-181.000.
Johns, William E.; and Locklin, David E., to Printed Circuits International, Inc. Method for making apparatus for testing traces on a printed circuit board substrate. 4,328,264, Cl. 427-97.000.
Johnson, Jeffrey O., to BRS, Inc. Outer sole structure for athletic shoe. 4,327,503, Cl. 36-32.00R.
Johnson & Johnson Baby Products Company: *See—*
Elias, Robert T., 4,327,728, Cl. 128-285.000.
Johnson, Richard S.; and Potter, John K., to Lever Brothers Company. Detergent compositions and processes for manufacturing them. 4,328,114, Cl. 252-135.000.

Johnson, Richard W.: *See*—
Colpack, Michael J.; Pasko, Edward; and Johnson, Richard W., 4,328,516, Cl. 358-113.000.

Johnson, Thomas M.: *See*—
Voorhees, John E.; and Johnson, Thomas M., 4,327,621, Cl. 83-820.000.

Jolly, Jean; Gigliotti, Giuseppe; Pavan, Charles; and Bulidon, Jacques, to Roussel Uclaf. Resolution of D,L-cis and D,L-trans 2,2-dimethyl-3-(2,2-dihalovinyl)-cyclopropane-1-carboxylic acids and salts thereof. 4,328,173, Cl. 260-501.160.

Jones, Marshall G.: *See*—
Haller, Theodore R.; Jones, Marshall G.; Kliman, Gerald B.; and Tompkins, Russell E., 4,328,411, Cl. 219-121.0EH.

Jones, William E.; and Bowers, Lynn R., to Jones, William E. Sink rinsing device. 4,327,867, Cl. 239-214.230.

Jorda, Pedro R. Tilting cab device for vehicles. 4,327,810, Cl. 180-89.150.

Jung, Johann: *See*—
Rentzea, Costin; Jung, Johann; Sauter, Hubert; Heilen, Gerd; and Zeeh, Bernd, 4,328,028, Cl. 71-76.000.

Juppet, Paul; and Konopatsky, Robert, to Rhone-Poulenc Textile. Apparatus for regulating the speed of a member delivering or winding a yarn. 4,327,873, Cl. 242-45.000.

Jusupov, Rasikh K.: *See*—
Kurbanov, Ildus A.; Jusupov, Rasikh K.; Borovik, Roman V.; Gabdulkhaev, Talgat G.; and Kurbanova, Ilmira A., 4,328,208, Cl. 424-88.000.

Kabbe, Hans-Joachim; Mayer, Hildegard E.; Mayer, Annedore; Ziemann, Heinz; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 2-Amino-3a,4,5,6-tetrahydro-perimidine derivatives and their medicinal use in combatting circulatory diseases. 4,328,223, Cl. 424-246.000.

Kabushiki Kaisha Shibaura Seisakusho: *See*—
Yamazaki, Kazuhide; Morisawa, Masaomi; and Nakajima, Maki, 4,327,645, Cl. 104-13.000.

Kabushiki Kaisha Sofard: *See*—
Abe, Kenichi, 4,328,534, Cl. 362-295.000.

Kabushiki Kaisha Tanaka Seisakusho: *See*—
Ashizawa, Takeshi; and Yasumura, Motoaki, 4,328,050, Cl. 148-9.00R.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Usami, Susumu, 4,328,431, Cl. 307-10.00R.

Kabushiki Kaisha Yokota: *See*—
Nakajima, Yukihiko; Ohkubo, Mitsuru; Hashimoto, Tadakatsu; and Nakamura, Shigeki, 4,327,797, Cl. 160-168.00R.

Kabushikigaisha Omco: *See*—
Okazaki, Yasukichi; and Okazaki, Tatsuo, 4,327,713, Cl. 128-33.000.

Kabushikikaisha Mori Tekkosho: *See*—
Hamanishi, Yoichi; Honma, Akiteru; Nihashi, Iwao; and Tanii, Seisuke, 4,327,569, Cl. 72-239.000.

Kagechika, Takashi, to Fuji Photo Optical Co., Ltd. Light beam projecting device for auto-focusing camera. 4,327,976, Cl. 354-25.000.

Kaiser, George S. Melt and hold furnace for non-ferrous metals. 4,327,901, Cl. 266-217.000.

Kaken Chemical Co., Ltd.: *See*—
Sugawara, Hideo; Miyazaki, Yukio; and Seino, Akio, 4,328,211, Cl. 424-117.000.

Kali-Chemie AG: *See*—
Musall, Reimar; and Wolsing, Wilhelm, 4,328,187, Cl. 422-179.000.

Kallevig, Jeffrey B.: *See*—
Bricko, Thomas K.; and Kallevig, Jeffrey B., 4,327,539, Cl. 56-113.000.

Kalthoff, Robert J.; and Neumeier, Paul J., to O. K. Partnership. Document retrieval system. 4,327,834, Cl. 209-609.000.

Kamada, Hiroshi: *See*—
Kimoto, Yasuo; Tamiya, Katsunori; Honda, Shoichi; Maehata, Hidehiko; and Kamada, Hiroshi, 4,328,083, Cl. 204-217.000.

Kamber, Bruno: *See*—
Rink, Hans; Sieber, Peter; and Kamber, Bruno, 4,328,214, Cl. 424-177.000.

Kameyama, Makoto: *See*—
Okawara, Makoto; Takaoka, Yukihisa; Kameyama, Makoto; and Sugiyama, Iwakichi, 4,328,170, Cl. 260-465.400.

Kamezawa, Yasutoki: *See*—
Kato, Mamoru; Yamaura, Susumu; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 4,328,265, Cl. 427-146.000.

Kaminski, Joan M.: *See*—
Horodysky, Andrew G.; Kaminski, Joan M.; Ashjian, Henry; and Gawel, Henry A., 4,328,113, Cl. 252-49.600.

Kamiya, Kazuhiro: *See*—
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, 4,328,307, Cl. 435-80.000.

Kanazawa, Akio: *See*—
Mori, Akira; Noda, Sekijiro; Osuo, Hiroshi; Kanazawa, Akio; Nishimura, Tadahiko; Yamamoto, Masatoshi; and Tomatsu, Yoshio, 4,328,377, Cl. 568-798.000.

Kanebo Ltd.: *See*—
Sotomura, Mikio; Iwamoto, Seiichi; Sawada, Teruo; Inoue, Shintaro; Suzuki, Akira; and Ikeda, Yoshiaki, 4,328,218, Cl. 424-195.000.

Kaneko, Yoshimasa: *See*—
Kawaguchi, Masaharu; Shiraishi, Yoshikatu; Maruyama, Kazuhiro; Imagawa, Hitoshi; and Kaneko, Yoshimasa, 4,328,398, Cl. 179-84.0VF.

Kanno, Masato; and Yamamoto, Kyoji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply pipe anti splash back device. 4,327,783, Cl. 141-349.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Iwasaki, Hiroshi; and Irii, Shinsuke, 4,328,119, Cl. 252-316.000.

Karam, Henry J., to Dow Chemical Company, The. Recirculating polymerization method and apparatus with evaporative cooling. 4,328,186, Cl. 422-132.000.

Karasawa, Kensuke: *See*—
Koizumi, Tatsuya; Furuya, Shuichi; Matsumoto, Koji; and Karasawa, Kensuke, 4,327,801, Cl. 165-104.210.

Karashima, Norihiko: *See*—
Abe, Masao; Kawahara, Haruo; Kogure, Yoichiro; Maeohmichi, Masahiro; Takeuchi, Tetsuo; and Karashima, Norihiko, 4,328,556, Cl. 364-900.000.

Karnes, Trulen F. Slide, pull and park bar hitch structure. 4,327,934, Cl. 280-423.00R.

Karpati, Egon: *See*—
Zajer nee Balazs, Maria; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,328,231, Cl. 424-256.000.

Kasama, Yasuo: *See*—
Nishimura, Tatsuo; Mifune, Hiroyuki; Fuseya, Yoshiharu; Urata, Yukihide; Shishido, Tadao; and Kasama, Yasuo, 4,328,302, Cl. 430-264.000.

Kasanami, Tohru: *See*—
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,328,048, Cl. 148-6.310.

Kashiwa, Norio: *See*—
Minami, Syuji; Ueda, Takashi; Kioka, Mamoru; and Kashiwa, Norio, 4,328,328, Cl. 526-125.000.

Kasper, Thomas J.: *See*—
Graboyes, Harold; Kasper, Thomas J.; and Vaidya, Praful D., 4,328,349, Cl. 548-343.000.

Kato, Mamoru; Yamaura, Susumu; Kamezawa, Yasutoki; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Process for preparation of a transfer sheet for electrostatic photography or printing. 4,328,265, Cl. 427-146.000.

Katz, Seymour, to E-Z-EM Company, Inc. Detection of temperature variations over regions of living tissue. 4,327,743, Cl. 128-736.000.

Katzen, Stanley J.: *See*—
Speca, Anthony N.; Katzen, Stanley J.; and Rekers, Louis J., 4,328,124, Cl. 252-430.000.

Kauff, Helmut: *See*—
Dilger, Peter; Honig, Gunter; and Kauff, Helmut, 4,328,526, Cl. 361-154.000.

Kaufman, Kurt D., to Elder Pharmaceuticals, Inc. 8-Aminoalkylpsoralens. 4,328,239, Cl. 424-279.000.

Kawabata, Yasuhiro, to Aisin Seiki Kabushiki Kaisha. Valve device for controlling flow of fluid. 4,327,772, Cl. 137-625.480.

Kawada, Tousuke: *See*—
Asai, Koichi; and Kawada, Tousuke, 4,327,484, Cl. 29-741.000.

Kawaguchi, Masaharu; Shiraishi, Yoshikatu; Maruyama, Kazuhiro; Imagawa, Hitoshi; and Kaneko, Yoshimasa, to Oki Electric Industry Co., Ltd.; and Nippon Telegraph & Telephone Public Corp. Digital multi-frequency receiver. 4,328,398, Cl. 179-84.0VF.

Kawahara, Haruo: *See*—
Abe, Masao; Kawahara, Haruo; Kogure, Yoichiro; Maeohmichi, Masahiro; Takeuchi, Tetsuo; and Karashima, Norihiko, 4,328,556, Cl. 364-900.000.

Kawahara, Hisashi, to Citizen Watch Company Limited. Voltage control system for electronic timepiece. 4,328,572, Cl. 368-204.000.

Kawakami, Kouji: *See*—
Watanabe, Toshihiko; Takenouchi, Naoki; Soga, Mitsurou; and Kawakami, Kouji, 4,328,412, Cl. 219-125.100.

Kawasaki, Shosuke. Work clamping vise. 4,327,903, Cl. 269-194.000.

Kawasaki Steel Corporation: *See*—
Yanagida, Yoshitsugu; Higuchi, Mitsuo; Ito, Yoshiaki; Nakaji, Shigeru; and Ehiro, Syogo, 4,327,466, Cl. 29-90.00R.

Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. High polymeric compounds having saccharide side chains. 4,328,337, Cl. 536-119.000.

Kawata, Masayuki, to Toyo Kogyo Co., Ltd. Catalytic converters for exhaust systems of internal combustion engines. 4,328,188, Cl. 422-180.000.

Kawata, Singo; and Takano, Takashi, to Victor Company of Japan, Ltd. Video signal, speed-change reproducing system. 4,328,518, Cl. 360-10.000.

Kawneer Company, Inc.: *See*—
Matthews, Thomas E., 4,327,532, Cl. 52-92.000.

Kayaku Antibiotic Research Co., Ltd.: *See*—
Koide, Yoshio; Edo, Kiyoto; and Ishida, Nakao, 4,328,212, Cl. 424-118.000.

Kear, Bernard H.: *See*—
Pearson, David D.; Lemkey, Frank D.; and Kear, Bernard H., 4,328,045, Cl. 148-3.000.

Keirsey, James L.: *See*—
Blevins, Ralph W.; Keirsey, James L.; and Shippen, William B., 4,327,885, Cl. 244-3.240.

Keitel, Rolf; Pagel, Ernst-Olav; and Drexler, Ludwig, to Audi Nsu Auto Union Aktiengesellschaft. System for monitoring the lubricating-oil pressure of an engine. 4,328,480, Cl. 340-60.000.

Kells, Edward L.: *See*—
Dejaiffe, Robert; and Kells, Edward L., 4,328,019, Cl. 65-19.000.

Kelly, Calvin E.; and Wilshire, Robert A., to United States Steel Corporation. Indexable marking wheel. 4,327,635, Cl. 101-18.000.

Kelly, Cornelius J. N., to Ensign-Bickford Industries, Inc. Electrically conductive composition, process for making an article using same. 4,327,480, Cl. 29-611.000.

Kelm, Edward: *See*—
Kurtin, Stephen; and Kelm, Edward, 4,328,573, Cl. 369-53.000.

Kemble, Richard E., to Nordson Corporation. Fail-safe thermostatically controlled circuit for use in apparatus for melting and dispensing thermoplastic material. 4,328,387, Cl. 219-517.000.

Kennedy, Warren C.: *See*—
Scarton, Henry A.; Kennedy, Warren C.; and Gaylo, Keith R., 4,327,817, Cl. 181-296.000.

Keogh, Michael J., to Union Carbide Corporation. Production of silane modified copolymers of alkylene-alkyl acrylates. 4,328,323, Cl. 525-106.000.

Keshavan, Hampapur R.: *See*—
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,328,577, Cl. 370-84.000.

Kesselring, Donald J.: *See*—
Setter, Alfred C.; and Kesselring, Donald J., 4,327,498, Cl. 33-333.000.

Keyes, David S.: *See*—
Evans, Thomas E.; and Keyes, David S., 4,328,406, Cl. 200-293.000.

Keyes, Richard M.; Schwitters, Stephen W.; and Baillie, William R., to Beatrice Foods Co. Dispensing apparatus with discharge assistant and rotary dispensing valve. 4,327,845, Cl. 222-340.000.

Keys, C. Brant. Hand-held jeweler's clamp. 4,327,608, Cl. 81-4.000.

Khoe, Giok D.; Gieles, Joannes P. M.; and Kuyt, Gerard, to U.S. Philips Corporation. Coupling element with a lens for an optical transmission system. 4,327,963, Cl. 350-96.180.

Kidde, Inc.: *See*—
Sterner, Russell L., 4,327,533, Cl. 52-115.000.

Kielbas, Eugen: *See*—
Adler, Karl-Heinz; Fritz, Adolf; Brand, Gunter; and Kielbas, Eugen, 4,328,439, Cl. 310-70.00R.

Kilpper, Gerhard; Grimmer, Johannes; Tonne, Peter; Horn, Hans C.; and Hetzel, Eckhard, to BASF Aktiengesellschaft. Continuous preparation of isatoic anhydride. 4,328,339, Cl. 544-94.000.

Kimberly-Clark Corporation: *See*—
Meitner, Gary H.; and Englebert, Stephen M., 4,328,279, Cl. 428-289.000.

Kimoto, Yasuo; Tamiya, Katsunori; Honda, Shoichi; Maehata, Hidehiko; and Kamada, Hiroshi, to Hitachi Shipbuilding and Engineering Co., Ltd. Apparatus for mirror-finishing a cylindrical. 4,328,083, Cl. 204-217.000.

Kimura, Takao: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.

Kincheloe, David W.; and Neathery, David O., to King Instrument Corporation. Extractor pin. 4,328,065, Cl. 156-502.000.

King Instrument Corporation: *See*—
Kincheloe, David W.; and Neathery, David O., 4,328,065, Cl. 156-502.000.

King, Lawrence W., to Procter & Gamble Company, The. Low-density disposable absorbent bandage having low stretch, wet strength center ply to provide improved pad integrity in use. 4,327,729, Cl. 128-287.000.

Kioka, Mamoru: *See*—
Minami, Syuji; Ueda, Takashi; Kioka, Mamoru; and Kashiwa, Norio, 4,328,328, Cl. 526-125.000.

Kiraly, Arpad: *See*—
Zajer nee Balazs, Maria; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,328,231, Cl. 424-256.000.

Kiraly nee Soos, Gyongyver: *See*—
Zajer nee Balazs, Maria; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,328,231, Cl. 424-256.000.

Kirchbrucher, Rudiger; and Becker, Kunibert, to Gewerkschaft Eisenhutte Westfalia. Apparatus for controlling the position of a mineral mining machine. 4,327,946, Cl. 299-33.000.

Kiriseko, Tadashi: *See*—
Kurahashi, Toshio; Tokitomo, Kazuo; and Kiriseko, Tadashi, 4,328,263, Cl. 427-93.000.

Kirshenboin, Zeev; and Soffa, Mark B., to Kulicke and Soffa Ind. Inc. Method of making slack free wire interconnections. 4,327,860, Cl. 228-179.000.

Kishida, Hiroshi: *See*—
Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, 4,328,166, Cl. 260-453.0AR.

Kitahara, Kenichi: *See*—
Nakadate, Takanori; Abe, Naoto; Kitahara, Kenichi; and Nakao, Hironobu, 4,328,283, Cl. 428-480.000.

Kiuchi, Masaru, to Silver Seiko Ltd. Collapsible knitting machine. 4,327,564, Cl. 66-60.00H.

Kiuchi, Seiji; and Imai, Shoji, to Fuji Photo Film Co., Ltd. Tape splicing apparatus. 4,328,066, Cl. 156-506.000.

Kiwala, Jacob: *See*—
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,327,749, Cl. 131-276.000.

Kiyohara, Takehiko: *See*—
Minoura, Kazuo; Kiyohara, Takehiko; and Saito, Jun, 4,327,959, Cl. 350-6.300.

Kladitis, Nicholas S. Non-steaming mirror. 4,327,961, Cl. 350-66.000.

Klancnik, Adolph V.; and Klancnik, Kenneth A., to Universal Automatic Corporation. Automatic turret lathe. 4,327,614, Cl. 82-29.00R.

Klancnik, Kenneth A.: *See*—
Klancnik, Adolph V.; and Klancnik, Kenneth A., 4,327,614, Cl. 82-29.00R.

Klein, Enrique J.: *See*—
Crystal, Richard G.; Gabor, Andrew; and Klein, Enrique J., 4,327,639, Cl. 101-93.340.

Klemarczyk, Philip: *See*—
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,328,109, Cl. 252-8.600.

Kleykamp, Donald L.; and Mathieu, Julien C., to Dayco Corporation. Wear member for railway vehicle and method of making same. 4,327,839, Cl. 213-61.000.

Kliegman, Jonathan M.; and McCarthy, Robert F., to GAF Corporation. Phosphoranyl derivatives containing nitrogen. 4,328,026, Cl. 71-86.000.

Kliman, Gerald B.: *See*—
Haller, Theodore R.; Jones, Marshall G.; Kliman, Gerald B.; and Tompkins, Russell E., 4,328,411, Cl. 219-121.0EH.

Klockner-Humboldt-Deutz AG: *See*—
Jakobs, Willy, 4,327,862, Cl. 233-7.000.

Klukis, Edward L., to Stayton Canning Company Cooperative. Cob saw. 4,327,616, Cl. 83-409.200.

Knapp, David C.: *See*—
Zemek, Albert W.; Tomko, Frederick G.; and Knapp, David C., 4,327,483, Cl. 29-741.000.

Knapp, Heinrich: *See*—
Sauer, Rudolf; Hans, Waldemar; and Knapp, Heinrich, 4,327,690, Cl. 123-469.000.

Knauff, Robert J. Inertial device for sight and sound effects in rotating apparatus. 4,327,518, Cl. 46-228.000.

Knepper, Larimer J.: *See*—
McDuffie, James W.; and Knepper, Larimer J., 4,327,544, Cl. 56-10.200.

Knoop, Donald E.: *See*—
Clarke, Clarence C.; Paddock, Stephen W.; and Knoop, Donald E., 4,327,557, Cl. 62-153.000.

Knoos, Stellan, to AGA Aktiebolag, part interest. Thermodynamic machine. 4,327,550, Cl. 60-522.000.

Knoos, Stellan P. Sailing craft self-steering system. 4,327,657, Cl. 114-144.00C.

Knowlton, Christopher M.: *See*—
Burgoon, Jack L.; and Knowlton, Christopher M., 4,328,014, Cl. 55-300.000.

Knutsen, Einar. Floating docks. 4,327,656, Cl. 114-47.000.

Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, to Diesel Kiki Co., Ltd. Fuel injection pump for internal combustion engines. 4,327,696, Cl. 123-506.000.

Kobayashi, Shinsaku: *See*—
Sato, Yasunobu; Tomita, Kuniyuki; and Kobayashi, Shinsaku, 4,328,238, Cl. 424-275.000.

Kobe Steel, Ltd.: *See*—
Watanabe, Toshihiko; Takenouchi, Naoki; Soga, Mitsurou; and Kawakami, Kouji, 4,328,412, Cl. 219-125.100.

Kobori, Toshio: *See*—
Ishida, Tokuji; and Kobori, Toshio, 4,327,978, Cl. 354-41.000.

Kobrehel, Gabrijela; Radobolja, Gordana; Tamburasev, Zrinka; and Djokic, Slobodan, to PLIVA Pharmaceutical and Chemical Works. 11-Aza-10-deoxo-10-dihydroerythromycin A and derivatives thereof as well as a process for their preparation. 4,328,334, Cl. 536-7.400.

Kochwa, Shaul: *See*—
Rosenfield, Richard E.; and Kochwa, Shaul, 4,328,183, Cl. 422-57.000.

Kock, Theodorus J. J. M.; and Smits, Jacobus J. G., to Nederlandse Organisatie voor Tiegeoast- Natyyrwetebscgaoookuhj Ibderziej ten behoeve van Nijverheid Handel en Verkeer. Process for the treatment of aromatic polyamide fibers, which are suitable for use in construction materials and rubbers, as well as so treated fibers and shaped articles reinforced with these fibers. 4,328,324, Cl. 525-423.000.

Kodama, Tadasi: *See*—
Isobe, Minoru; Ishii, Etumi; Imai, Shuichi; Kodama, Tadasi; and Ohara, Wataru, 4,327,856, Cl. 226-162.000.

Koder, Walter: *See*—
Muller, Leo; and Koder, Walter, 4,327,823, Cl. 192-98.000.

Koetz, Hans-Joachim: *See*—
Muellejans, Herbert; and Koetz, Hans-Joachim, 4,327,803, Cl. 165-166.000.

Kogure, Yoichiro: *See*—
Abe, Masao; Kawahara, Haruo; Kogure, Yoichiro; Maeohmichi, Masahiro; Takeuchi, Tetsuo; and Karashima, Norihiko, 4,328,556, Cl. 364-900.000.

Kohl, Albert: *See*—
Lehner, August; Hartmann, Heinrich; Bachmann, Rudolf; Balz, Werner; and Kohl, Albert, 4,328,282, Cl. 428-425.900.

Kohlmueller, Hans: *See*—
Baur, Guenter; Kohlmueller, Hans; and Krueger, Hans, 4,327,970, Cl. 350-363.000.

Koide, Yoshio; Edo, Kiyoto; and Ishida, Nakao, to Kayaku Antibiotic Research Co., Ltd. Novel antibiotic NCS-C and preparation method of the same. 4,328,212, Cl. 424-118.000.

Koizumi, Tatsuya; Furuya, Shuichi; Matsumoto, Koji; and Karasawa, Kensuke, to Furukawa Electric Company, Ltd., The. Cylindrical heat exchanger using heat pipes. 4,327,801, Cl. 165-104.210.

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Mizuno, Toshio; and Muratani, Takuro, 4,328,587, Cl. 375-97.000.

Kolczynski, James R.: *See*—
McKellin, Wilbur H.; Kolczynski, James R.; Mageli, Orville L.; and D'Angelo, Antonio J., 4,328,360, Cl. 560-129.000.

Kold Ban International, Ltd.: *See*—
Burke, James W.; and Cook, John N., 4,327,766, Cl. 137-343.000.

Koller, Stefan; Eugster, Peter; and Agarwal, Suresh C., to Ciba-Geigy Corporation. Disperse dye stable to dyeing, and its use for dyeing synthetic and semi-synthetic fibre materials. 4,327,999, Cl. 8-526.000.

Komarek, Jaromir: *See*—
Ulrich, Gebert; Thorwart, Werner; Komarek, Jaromir; Cartheuser, Carl; Popendiker, Kurt; and Greve, Heinz-Gunther, 4,328,227, Cl. 424-250.000.

Komatsu, Satoshi: *See*—
Takeuchi, Osamu; Chiba, Satoshi; Komiya, Satoru; Komatsu, Satoshi; Asada, Kazuo; Tokashiki, Yuji; and Shimazaki, Hiroshi, 4,327,991, Cl. 355-3.0SH.

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Yanai, Noboru; Komori, Toshiyuki; Ichioka, Atushi; and Imooka, Masanori, 4,328,488, Cl. 340-578.000.

Kompelien, Arlon D., to Honeywell Inc. Two-wire condition control circuit means. 4,328,528, Cl. 361-211.000.

Kondo, Asaji, to Fuji Photo Film Co., Ltd. Test slide strip. 4,328,184, Cl. 422-58.000.

Kondo, Michikazu; Ohta, Yoshinori; and Sakaguchi, Mitsuhito, to Nippon Electric Co., Ltd. Electro-optical light modulators, light wavelength multiplex signal transmitting apparatus and light wavelength separating switches utilizing the same. 4,327,971, Cl. 350-388.000.

Kondow, Kiyohiro; Yoshida, Tetuo; and Tateyama, Yuki, to Shin-Etsu Chemical Co., Ltd. Curable epoxy resin compositions. 4,328,150, Cl. 523-400.000.

Kondow, Ryotaro: *See*—
Yamaura, Mitsuru; Kondow, Ryotaro; and Matsuzawa, Kunio, 4,328,551, Cl. 364-492.000.

Konig, Klaus: *See*—
Haas, Peter; Muller, Heinz; Seifert, Peter; Wagner, Kuno; Findeisen, Kurt; and Konig, Klaus, 4,328,321, Cl. 521-108.000.

Konishi, Hiromu: *See*—
Nakayama, Haruhiko; Uchida, Kiyoshi; Sugiyama, Masahiko; and Konishi, Hiromu, 4,327,820, Cl. 188-370.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Nakadate, Takanori; Abe, Naoto; Kitahara, Kenichi; and Nakao, Hironobu, 4,328,283, Cl. 428-480.000.

Konopatsky, Robert: *See*—
Juppet, Paul; and Konopatsky, Robert, 4,327,873, Cl. 242-45.000.

Koppel, Jakob: *See*—
Kovari, Kalman; Koppel, Jakob; and Amstad, Christian, 4,327,590, Cl. 73-784.000.

Korb, Barry R.: *See*—
Dickey, David C.; Korb, Barry R.; Baroff, James H.; and Raff, Samuel J., 4,327,500, Cl. 33-457.000.

Korber, Jurgen: *See*—
Scholz, Hansjurgen; Brambilla, Luigi; Backhaus, Hans-Gerd; and Korber, Jurgen, 4,327,937, Cl. 280-732.000.

Korpman, Ralf, to Permacel. Pressure sensitive adhesive and tape. 4,328,269, Cl. 428-40.000.

Kosorcic, Ratko: *See*—
Schmidtner, Erich; and Kosorcic, Ratko, 4,328,537, Cl. 363-21.000.

Kossatz, Gert. Process of producing a building product of gypsum, particularly a gypsum slab. 4,328,178, Cl. 264-69.000.

Kostovski, Momchilo. Art of making latch hooked articles. 4,328,270, Cl. 428-43.000.

Kovari, Kalman; Koppel, Jakob; and Amstad, Christian, to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule. Method and apparatus for determining shifts at terrain and in structures. 4,327,590, Cl. 73-784.000.

Kowa Company, Ltd.: *See*—
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, 4,328,307, Cl. 435-80.000.

Kraeling, John B., Jr.; Mann, Alexander B.; and Bukowski, Ronald G., to Zurn Industries, Inc. Structural strainer. 4,328,103, Cl. 210-411.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Inticbar, Lutz; Kuter, Heinrich; and Weghaupt, Erich, 4,328,437, Cl. 310-52.000.

Krappmann, Franz; Richter, Bernhard; and Paruse, Siegfried, to Krauss-Maffei Aktiengesellschaft. Mufti-disk rotary filter. 4,328,099, Cl. 210-232.000.

Kratzer, Hans: *See*—
Bonse, Gerhard; Blank, Heinz U.; and Kratzer, Hans, 4,328,340, Cl. 544-182.000.

Krauss-Maffei Aktiengesellschaft: *See*—
Krappmann, Franz; Richter, Bernhard; and Paruse, Siegfried, 4,328,099, Cl. 210-232.000.

Krawczak, John A.; and Torok, Ernest J., to Sperry Corporation. Multipass laser optics for light deflector. 4,328,468, Cl. 372-97.000.

Kray, William D.: *See*—
Chung, Rack H.; and Kray, William D., 4,328,346, Cl. 548-110.000.

Kreft, Keith A.; Rossetti, Alan E.; Lynn, Michael F.; and Wagoner, Jesse W., to Sun Electric Corporation. Apparatus for evaluating the performance of an internal combustion engine using exhaust gas emission data. 4,328,546, Cl. 364-424.000.

Kreissig, Ernst F., to Schweizerische Lokomotiv-und Maschinenfabrik. Maximum traction locomotive. 4,327,649, Cl. 105-199.00R.

Kremith, Roland D.: *See*—
Muehlberger, Erich; and Kremith, Roland D., 4,328,257, Cl. 427-34.000.

Kressel, Henry; and Olsen, Gregory H., to RCA Corporation. III-V Quaternary alloy photodiode. 4,328,508, Cl. 357-16.000.

Kretschmer, Klaus: *See*—
Goehlich, Lothar; and Kretschmer, Klaus, 4,328,393, Cl. 174-73.00R.

Kretzschmar, Siegfried: *See*—
Alt, Werner; Kretzschmar, Siegfried; and Wohler, Hans-Joachim, 4,328,176, Cl. 261-111.000.

Kriebitzsch, Norbert: *See*—
Bittner, Friedrich; Heimberger, Werner; Henkel, Kurt; Kriebitzsch, Norbert; Petzold, Martin; and Puschner, Kurt, 4,328,010, Cl. 55-51.000.

Krizen, William C.: *See*—
Addy, Clarence A.; and Krizen, William C., 4,327,655, Cl. 112-222.000.

Kroeger, Frederick R., Jr.; and Norquist, Richard A., to Minnesota Mining and Manufacturing Company. Output circuit for piezoelectric polymer pressure sensor. 4,328,441, Cl. 310-319.000.

Krueger, Hans: *See*—
Baur, Guenter; Kohlmueller, Hans; and Krueger, Hans, 4,327,970, Cl. 350-363.000.

Krupp-Koppers GmbH: *See*—
Geidies, Ulrich; and Wilmer, Gerhard, 4,328,011, Cl. 55-89.000.

Krzeptowski, Andrzej J., to GTE Automatic Laboratories, Inc. Method for separating hybrid substrate from carrier plate. 4,327,472, Cl. 29-426.500.

Kublick, Christian, to Siemens Aktiengesellschaft. Method and apparatus for controlling inverters in parallel operation. 4,328,429, Cl. 307-58.000.

Kucera, Carrell J., to Norden Laboratories, Inc. Modified Pasteurella bacteria and vaccines prepared therefrom. 4,328,210, Cl. 424-92.000.

Kuchenbecker, Morris W., to American Can Company. Liquid tight pouring carton. 4,327,833, Cl. 206-621.000.

Kugler, Artur: *See*—
Zaunberger, Franz X.; and Kugler, Artur, 4,327,603, Cl. 74-688.000.

Kuhn, William T., to Kuhn, William T.; Rose, Paul F.; and Rose, Thomas H. Continuous center-winding apparatus and method. 4,327,876, Cl. 242-56.00A.

Kuhrt, Noel H., Jr.: *See*—
Friar, Lawrence B.; Kuhrt, Noel H., Jr.; and Vanover, Joel L., 4,327,987, Cl. 354-317.000.

Kulicke and Soffa Ind. Inc.: *See*—
Kirshenboin, Zeev; and Soffa, Mark B., 4,327,860, Cl. 228-179.000.

Kulischenko, Walter, to Pennwalt Corporation. Marine steering system. 4,327,658, Cl. 114-146.000.

Kumagai, Teruo: *See*—
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shinpei; Nishimura, Tsukasa; and Nishimura, Yasuyuki, 4,328,195, Cl. 423-242.000.

Kumakura, Masaaki, to Negurosu Electrical Ind. Co. Ltd. Mounting clip. 4,327,887, Cl. 248-73.000.

Kunieda, Takafumi: *See*—
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, 4,328,307, Cl. 435-80.000.

Kurahashi, Toshio; Tokitomo, Kazuo; and Ono, Toshihiko, to Fujitsu Limited. Method of manufacturing semiconductor devices having photoresist film as a permanent layer. 4,328,262, Cl. 427-93.000.

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Kurai, Nobuyoshi: *See*—
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,327,812, Cl. 180-226.000.
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,327,930, Cl. 280-284.000.

Kurbanov, Ildus A.; Jusupov, Rasikh K.; Borovik, Roman V.; Gabdulkhaev, Talgat G.; and Kurbanova, Ilmira A. Vaccine against chlamydous infections of farm animals. 4,328,208, Cl. 424-88.000.

Kurbanova, Ilmira A.: *See*—
Kurbanov, Ildus A.; Jusupov, Rasikh K.; Borovik, Roman V.; Gabdulkhaev, Talgat G.; and Kurbanova, Ilmira A., 4,328,208, Cl. 424-88.000.

Kureha Gosen Kabushiki Kaisha: *See*—
Nakamura, Masaaki; and Ueba, Hisaaki, 4,328,055, Cl. 156-167.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, 4,328,337, Cl. 536-119.000.
Nakamura, Masaaki; and Ueba, Hisaaki, 4,328,055, Cl. 156-167.000.

Kuriloff, Fredric M.: *See*—
Becker, James R.; Cooper, Julius; and Kuriloff, Fredric M., 4,327,920, Cl. 273-238.000.

Kurtin, Stephen; and Kelm, Edward, to NAD International. Precision phonocartridge interface. 4,328,573, Cl. 369-53.000.

Kurumada, Katsuhiko: *See—*
Asai, Kazuyoshi; Ishii, Yasunobu; and Kurumada, Katsuhiko, 4,327,475, Cl. 29-571.000.

Kuryn, Walter. Starter for muzzle loading firearm. 4,327,515, Cl. 42-90.000.

Kusters, Eduard; and Ahrweiler, Karl-Heinz, to Kusters, Eduard. Controlled deflection roll. 4,327,468, Cl. 29-116.0AD.

Kuter, Heinrich: *See—*
Inticbar, Lutz; Kuter, Heinrich; and Weghaupt, Erich, 4,328,437, Cl. 310-52.000.

Kutney, James P.: *See—*
Chalmers, William T.; Kutney, James P.; Salisbury, Phillip J.; Stuart, Kenneth L.; Townsley, Phillip M.; and Worth, Brian R., 4,328,309, Cl. 435-126.000.

Kutnyak, Thomas A., to Automation Industries, Inc. Welded-turn helical electrical conduit with electrically conductive grounding element. 4,328,392, Cl. 174-68.00C.

Kuwano, Yasuhiko: *See—*
Masumoto, Toshiaki; and Kuwano, Yasuhiko, 4,327,492, Cl. 372-41.000.

Kuyt, Gerard: *See—*
Khoe, Giok D.; Gieles, Joannes P. M.; and Kuyt, Gerard, 4,327,963, Cl. 350-96.180.

Kuzma, Petr. Compositions comprising water and hydrophilic polymers and contact lenses therefrom. 4,328,148, Cl. 524-555.000.

Kwong, Peter C.; and Laurin, Dean G., to Baxter Travenol Laboratories, Inc. Connector member for dissimilar materials. 4,327,726, Cl. 128-272.000.

Kyan, Chwan P., to Chevron Research Company. Shaped channeled catalyst. 4,328,130, Cl. 252-477.00R.

Kyllo, Roger A.: *See—*
Harmon, James V.; and Kyllo, Roger A., 4,328,581, Cl. 371-8.000.

Kyogoku, Hiroshi, to Canon Kabushiki Kaisha. Recording apparatus. 4,328,507, Cl. 346-139.00R.

L. S. Starrett Company, The: *See—*
Plante, Robert, 4,327,495, Cl. 33-174.00C.

La Telemecanique Electrique: *See—*
Lefebvre, Marcel, 4,328,419, Cl. 250-214.00R.

Laing, David A.: *See—*
Grant, Gerald B.; Madsen, Roger J.; and Laing, David A., 4,327,898, Cl. 266-67.000.

Lake Center Industries: *See—*
Tryan, Fredrick W., 4,328,522, Cl. 361-33.000.

Lake, Lawrence K. Apparatus for attaching to a snow ski. 4,327,935, Cl. 280-604.000.

Lam, Margaret M.: *See—*
Conley, Richard A.; Lam, Margaret M.; and High, Leroy B., 4,328,342, Cl. 546-153.000.

Lambert, Joe C.: *See—*
Davis, Richard K.; and Lambert, Joe C., 4,328,447, Cl. 318-331.000.

Lamberts, Burton L.: *See—*
Simonson, Lloyd G.; and Lamberts, Burton L., 4,328,313, Cl. 435-200.000.

Lamboo, Theodorus F.: *See—*
van den Brink, Hans G.; and Lamboo, Theodorus F., 4,328,467, Cl. 372-98.000.

Lamon, Douglas: *See—*
Cazaly, Laurence G.; and Lamon, Douglas, 4,327,531, Cl. 52-73.000.

Lancaster, James W. Non-interrupting gas meter exchange system. 4,327,760, Cl. 137-15.000.

Landers, Samuel P., to Goodyear Tire & Rubber Company, The. Spreading noise generated by load supporting elements. 4,327,792, Cl. 152-209.00R.

Landis, William R., to Honeywell Inc. Selective ultraviolet signal amplifier circuit. 4,328,527, Cl. 361-175.000.

Langloy, Charles. Tongs designed to lift and handle metal sheets and similar materials. 4,327,944, Cl. 294-101.000.

Lanzerath, Gunter: *See—*
Vogele, Richard; and Lanzerath, Gunter, 4,327,822, Cl. 192-41.00A.

Larcombe, Michael H. E.: *See—*
Halsall, James R.; Larcombe, Michael H. E.; Robertson, James R.; and Rogers, Mark A. M., 4,328,545, Cl. 364-424.000.

Large, George B.: *See—*
Buren, Lawrence L.; and Large, George B., 4,328,027, Cl. 71-86.000.

Larsen, Ebbe B. B., to Norvidan Engineering ApS. Method for regulating a pellet mill. 4,327,871, Cl. 241-18.000.

Larson, Harold V., to Olin Corporation; and United States Gypsum Company. Process for removing radium from monocalcium phosphate solutions by centrifugation. 4,328,193, Cl. 423-166.000.

Laser Industries, Ltd.: *See—*
Raif, Joshua, 4,327,973, Cl. 351-9.000.

Lasheras Barrios, Fernando. Anti-aircraft projectile with base, high-explosive body, and ogive. 4,327,643, Cl. 102-493.000.

Latimer, John P.: *See—*
Hinman, Mark H.; and Latimer, John P., 4,327,505, Cl. 37-54.000.

Latsch, Reinhard; Schlembach, Hans; and Scherenberg, Dieter, to Robert Bosch GmbH. Internal combustion engine having a main combustion chamber and an ignition device inserted into an ignition chamber. 4,327,681, Cl. 123-260.000.

Lauchenauer, Alfred E., to Raduner & Co. A.G. Tack spun materials. 4,328,058, Cl. 156-254.000.

Laucht, Walter: *See—*
Engel, Arno; Laucht, Walter; and Tiedtke, Wille, 4,327,900, Cl. 266-193.000.

Laurin, Dean G.: *See—*
Kwong, Peter C.; and Laurin, Dean G., 4,327,726, Cl. 128-272.000.

Lawhorn, William S., to United States of America, Air Force. Advanced air-to-surface weapon. 4,327,884, Cl. 244-3.100.

Lawrence, Charles T., to Talon, Inc. Method of making a slide fastener installation. 4,327,470, Cl. 29-408.000.

Lawson, James A., to Texas Instruments Incorporated. Microprocessor for oven control. 4,328,408, Cl. 219-10.55B.

Learning Games Limited: *See—*
Foster, David B., 4,327,918, Cl. 273-186.00R.

Le Bec, Dominique, to Poutrait-Morin. Emergency release device for a toe clip strap. 4,327,602, Cl. 74-594.600.

LeBlond Incorporated: *See—*
Bazuin, Johannes, 4,327,612, Cl. 82-2.00R.

Leco Corporation: *See—*
Bredeweg, Roger L., 4,328,386, Cl. 373-118.000.

Lee, Benedict M.; and Gibson, Gary W., to Eastman Kodak Company. Tow deflector device for puddling jet. 4,327,855, Cl. 226-97.000.

Lee, Dah-Yinn: *See—*
Demirel, Turgut; Lee, Dah-Yinn; and Boybay, Mustafa, 4,328,037, Cl. 106-85.000.

Lee, Francis H. Vehicle with spray means. 4,327,666, Cl. 118-679.000.

Lee, Joseph E.: *See—*
Butters, William G.; and Lee, Joseph E., 4,328,461, Cl. 324-72.000.

Lee, Ronald L., to Westinghouse Electric Corp. Single sideband receiver. 4,328,590, Cl. 455-203.000.

Leeper, Charles G.; and Wood, John F., to Hennessy Industries, Inc. Tire changing apparatus. 4,327,794, Cl. 157-1.280.

Lees, Robert: *See—*
Sachleben, Harold G., Sr.; and Lees, Robert, 4,327,872, Cl. 242-18.00A.

Lefebvre, Marcel, to La Telemecanique Electrique. Photo-electric detector with temperature-compensated circuit. 4,328,419, Cl. 250-214.00R.

Leger, Laurie J., to Honeywell Information Systems Inc. Universal snap-in card guide for printed circuit card enclosures. 4,327,835, Cl. 211-41.000.

Lehmann, Hartmut, to Womako Maschinenkonstruktionen GmbH. Apparatus for looping the outermost convolutions of spiral binders. 4,327,780, Cl. 140-92.700.

Lehner, August; Hartmann, Heinrich; Bachmann, Rudolf; Balz, Werner; and Kohl, Albert, to BASF Aktiengesellschaft. Magnetic recording media. 4,328,282, Cl. 428-425.900.

Lehning, Heinz, to Robert Bosch GmbH. Current hogging logic circuit with npn vertical reversal transistor and diode/pnp vertical transistor output. 4,328,509, Cl. 357-36.000.

Leining, Lyndon R.; and Simonson, Kent L., to Geo. A. Hormel & Co. Ham skinning apparatus. 4,327,633, Cl. 99-589.000.

Lemkey, Frank D.: *See—*
Pearson, David D.; Lemkey, Frank D.; and Kear, Bernard H., 4,328,045, Cl. 148-3.000.

Lenz, Hans Peter: *See—*
Moser, Franz, 4,327,691, Cl. 123-478.000.

Leon, Harry I.; and Leon, Vivian L. Earth-embedded, temperature-stabilized heat exchanger. 4,327,560, Cl. 62-260.000.

Leon, Vivian L.: *See—*
Leon, Harry I.; and Leon, Vivian L., 4,327,560, Cl. 62-260.000.

LePoutre, Pierre F. Coating of paper. 4,328,284, Cl. 428-511.000.

Leroy, Pierre J., to Creusot-Loire. Method of mixed blowing for refining metals in a converter. 4,328,031, Cl. 75-60.000.

Lesley, Samuel: *See—*
Crouch, Alan R.; and Lesley, Samuel, 4,327,679, Cl. 123-195.00R.

Leslie, Frank M.: *See—*
Shanks, Ian A.; Clark, Michael G.; and Leslie, Frank M., 4,328,493, Cl. 340-784.000.

Leung, Danton: *See—*
Rowley, Gerald L.; Leung, Danton; and Singh, Prithipal, 4,328,311, Cl. 435-188.000.

Lever Brothers Company: *See—*
Johnson, Richard S.; and Potter, John K., 4,328,114, Cl. 252-135.000.

Levi Strauss & Co.: *See—*
Blessing, Hubert, 4,327,653, Cl. 112-121.140.

Levy, Alvin C.: *See—*
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,328,394, Cl. 174-106.00D.

Lewis, John T.: *See—*
Pettyjohn, William H.; Lewis, John T.; and Milligan, William E., deceased, 4,327,526, Cl. 51-245.000.

Lieb, Julian: *See—*
Horrobin, David F.; and Lieb, Julian, 4,328,243, Cl. 424-301.000.

Life Savers, Inc.: *See—*
Mackay, Donald A. M.; and Puglia, Wayne J., 4,328,249, Cl. 426-3.000.

Light, Kenneth K.: *See—*
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,327,749, Cl. 131-276.000.

Lightfoot, Clinton W., to Minnesota Mining & Manufacturing Company. Pressure sensitive notepaper dispenser. 4,327,875, Cl. 242-55.530.

Likins, Merle R., Jr., to Phillips Petroleum Company. Batch distillation. 4,328,073, Cl. 203-2.000.
Lim, Nam: *See*—
Ingles, Owen G.; and Lim, Nam, 4,328,035, Cl. 106-84.000.
Lin, Shiow-Ching; and Noren, Gerry K., to DeSoto, Inc. Curable N-acylurea polymers and coating compositions therefrom. 4,328,138, Cl. 525-451.000.
Linde Aktiengesellschaft: *See*—
Arbuckle, William B., 4,328,105, Cl. 210-663.000.
Lindow, Donald F.: *See*—
Sandefur, Charles W.; Lindow, Donald F.; and Thomas, Thomas J., 4,327,998, Cl. 8-524.000.
Ling, Chong-Kuan. Latching device and combination locking means. 4,327,566, Cl. 70-312.000.
Linker, Karl-Heinz: *See*—
Findeisen, Kurt; and Linker, Karl-Heinz, 4,328,351, Cl. 556-415.000.
Linx Building Systems Corp.: *See*—
Ascher, Raymond R., 4,327,536, Cl. 52-309.120.
Lipp, David W.: *See*—
Farewell, John P.; and Lipp, David W., 4,328,141, Cl. 524-272.000.
Lissau, Frederic: *See*—
Allen, Charles S.; Allen, Charles C.; and Lissau, Frederic, 4,327,891, Cl. 251-38.000.
Lisse, Jean-Pierre, J., to Automobiles Citroen and Automobiles Peugeot. Electrochemical generators. 4,328,293, Cl. 429-149.000.
Litton Systems, Inc.: *See*—
Loomer, Weston R., 4,328,422, Cl. 250-239.000.
Littwin, Burkhard, to Siemens Aktiengesellschaft. Gas discharge display device with a lamellar lattice in the gas discharge space. 4,328,444, Cl. 313-492.000.
Locke, Frank E.: *See*—
Harrar, Jackson E.; Lorensen, Lyman E.; and Locke, Frank E., 4,328,106, Cl. 210-700.000.
Locker, Laurence D. Monitoring apparatus and method for toxic vapors. 4,327,575, Cl. 73-23.000.
Locklin, David E.: *See*—
Johns, William E.; and Locklin, David E., 4,328,264, Cl. 427-97.000.
Loehr, Clifford E.: *See*—
Welch, Cletus N.; Loehr, Clifford E.; Crawford, Roger A.; and Carbaugh, John E., 4,328,200, Cl. 423-474.000.
Loffler, Heiner: *See*—
von Kamienski, Elard S.; and Loffler, Heiner, 4,328,253, Cl. 426-307.000.
Longenecker, Levi S. Electro furnace feeding and furnace fume utilization and control. 4,328,388, Cl. 373-80.000.
Longo, Joseph F., to Condor International Corporation. Material handling bucket arrangement. 4,327,943, Cl. 294-70.000.
Longoni, Angelo: *See*—
Piccardi, Paolo; Corda, Francesco; Gozzo, Franco; Menconi, Augusto; and Longoni, Angelo, 4,328,237, Cl. 424-274.000.
Loomer, Weston R., to Litton Systems, Inc. Automated warehouse vehicle position determining system. 4,328,422, Cl. 250-239.000.
Loratto, Robert J. Log splitting assembly. 4,327,787, Cl. 144-193.00C.
Lord Corporation: *See*—
Rebman, Jack, 4,327,496, Cl. 33-180.00R.
Lorensen, Lyman E.: *See*—
Harrar, Jackson E.; Lorensen, Lyman E.; and Locke, Frank E., 4,328,106, Cl. 210-700.000.
Lorenzo, Donald K.; and Van Cleve, John E., Jr., to United States of America, Energy. Canister arrangement for storing radioactive waste. 4,328,423, Cl. 250-506.000.
Lowther, Frank E., to Purification Sciences Inc. Cylinder pressure control of fluid injection in an internal combustion engine. 4,327,688, Cl. 123-435.000.
Lubozynski, Lisa J. Foldable structure. 4,327,516, Cl. 46-31.000.
Lucas Industries Ltd.: *See*—
Irons, Brian P. G., 4,327,486, Cl. 29-847.000.
Stafford, Michael J., 4,328,440, Cl. 310-233.000.
Lueddecke, Erik: *See*—
Horn, Dieter; Lueddecke, Erik; and Heuck, Claus C., 4,328,000, Cl. 23-230.00B.
Lund, Clarence J.: *See*—
Tusinski, Joseph; Hill, Phillip D.; and Lund, Clarence J., 4,328,060, Cl. 156-344.000.
Lunsford, Bobby R., to Dayco Corporation. Windshield wiper and method of making same. 4,327,457, Cl. 15-250.030.
Lunt, Audrey T. Disposable non-woven shorts. 4,327,448, Cl. 2-404.000.
Luursema, Meerten, to U.S. Philips Corporation. Electronic flashgun. 4,327,981, Cl. 354-145.000.
Lynn, Michael F.: *See*—
Kreft, Keith A.; Rossetti, Alan E.; Lynn, Michael F.; and Wagoner, Jesse W., 4,328,546, Cl. 364-424.000.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Grossmann, Joachim; and Hoff, Heinz, 4,327,551, Cl. 60-524.000.
Ma, Yueh Y.: *See*—
Yaron, Giora; Harari, Eliyahou; Hess, LaVerne D.; and Ma, Yueh Y., 4,327,477, Cl. 29-576.00B.
Mac Engineering: *See*—
Cattano, John D., 4,327,890, Cl. 249-110.000.
MacDonald, Kenneth: *See*—
Dybel, Frank R.; and MacDonald, Kenneth, 4,327,591, Cl. 73-855.000.
Machida, Toyotaka: *See*—
Furihato, Makoto; Machida, Toyotaka; and Ikemura, Yuichi, 4,328,513, Cl. 358-19.000.
Machinefabriek Mokveld B.V.: *See*—
Weevers, Henri H., 4,327,757, Cl. 137-625.300.
Mackay, Donald A. M.; and Puglia, Wayne J., to Life Savers, Inc. Method for treating gum base to improve shelf-life without need for antioxidants. 4,328,249, Cl. 426-3.000.
Mackie, Glenn E. Arm wrestling device. 4,327,910, Cl. 273-1.0GI.
Maco-Meudon: *See*—
Emonet, Henri, 4,327,807, Cl. 173-134.000.
Madsen, Roger J.: *See*—
Grant, Gerald B.; Madsen, Roger J.; and Laing, David A., 4,327,898, Cl. 266-67.000.
Maehata, Hidehiko: *See*—
Kimoto, Yasuo; Tamiya, Katsunori; Honda, Shoichi; Maehata, Hidehiko; and Kamada, Hiroshi, 4,328,083, Cl. 204-217.000.
Maeohmichi, Masahiro: *See*—
Abe, Masao; Kawahara, Haruo; Kogure, Yoichiro; Maeohmichi, Masahiro; Takeuchi, Tetsuo; and Karashima, Norihiko, 4,328,556, Cl. 364-900.000.
Mageli, Orville L.: *See*—
McKellin, Wilbur H.; Kolczynski, James R.; Mageli, Orville L.; and D'Angelo, Antonio J., 4,328,360, Cl. 560-129.000.
Magnetic Peripherals Inc.: *See*—
Pexton, Harold W.; and Smith, Robert A., 4,328,521, Cl. 360-104.000.
Maiocco, Guiseppe, to Arman S.p.A. Device for connecting a wiper blade holder to a wiper arm. 4,327,458, Cl. 15-250.320.
Maistre, Michel, to Societe Europeenne de Propulsion. Reinforced laminated structure. 4,328,272, Cl. 428-105.000.
Makely, Joseph V.: *See*—
Fisher, Gordon L.; and Makely, Joseph V., 4,328,076, Cl. 204-14.00R.
Mallinckrodt, Inc.: *See*—
Metz, Fred L., 4,328,115, Cl. 252-186.000.
Malmendier, Joseph W.: *See*—
Bonk, John A.; and Malmendier, Joseph W., 4,328,022, Cl. 65-43.000.
Mancini, Gerold A.; and Dormer, George J., to Sybron Corporation. Titanium and niobium high strength steel alloys. 4,328,032, Cl. 75-124.000.
Manin, Michel G., to Compagnie Generale de Geophysique. Generation of seismic sources. 4,327,813, Cl. 181-120.000.
Mann, Alexander B.: *See*—
Kraeling, John B., Jr.; Mann, Alexander B.; and Bukowski, Ronald G., 4,328,103, Cl. 210-411.000.
Manowitz, Milton: *See*—
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Mantione, Joseph L., to United States of America, Navy. Programmable frequency synthesizer (PFS). 4,328,554, Cl. 364-721.000.
Manville Service Corporation: *See*—
Meserole, Robert H., 4,327,776, Cl. 138-109.000.
Marchetti, Carmine A.: *See*—
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Marconi Company Limited, The: *See*—
Anderson, Donald W.; and Ogier, Leonard J., 4,328,499, Cl. 343-113.00R.
Marconi, Walter: *See*—
Mazzei, Marcello; Riocci, Mario; and Marconi, Walter, 4,328,364, Cl. 562-401.000.
Markhasin, Alexandr B.; Belyaev, Gennady V.; Babushkin, Jury V.; and Petrov, Alexandr K. Apparatus for exchange of data between central station and peripheral stations and system for effecting same. 4,328,559, Cl. 364-900.000.
Markkula, Orvo E. Work fixture. 4,327,786, Cl. 144-154.000.
Markson Manufacturing Company: *See*—
Scheneman, Henry F., 4,327,888, Cl. 248-221.200.
Marquardt, Klaus; and Wiest, Hubert, to Wacker Chemie GmbH. Process for the preparation of polymers containing urethane groups. 4,328,325, Cl. 525-451.000.
Martel, Jacques; Tessier, Jean; and DeMoute, Jean-Pierre, to Roussel Uclaf. Process for the preparation of optically active cyano alcohols. 4,328,167, Cl. 260-465.00F.
Martin, Eugene G., to Victor F. Weaver, Inc. Single station anatomical section de-boning machine. 4,327,463, Cl. 17-11.000.
Martin, James L.: *See*—
Henson, Ralph B.; and Martin, James L., 4,327,694, Cl. 123-500.000.
Martin, Paul W., to Dresser Industries, Inc. Tubing expander for boiler tubes or the like. 4,327,567, Cl. 72-119.000.
Maruyama, Kazuhiro: *See*—
Kawaguchi, Masaharu; Shiraishi, Yoshikatu; Maruyama, Kazuhiro; Imagawa, Hitoshi; and Kaneko, Yoshimasa, 4,328,398, Cl. 179-84.0VF.
Masaru, Ogata; and Hiroshi, Matsumoto, to Shionogi & Co., Ltd. Meta-sulfonamido-benzamides. 4,328,155, Cl. 548-567.000.
Masaru, Ogata; and Matsumoto, Hiroshi, to Shionogi & Co., Ltd. Meta-amino sulfonamido-benzamides. 4,328,344, Cl. 546-208.000.

Maschler, Francis S.; and Seifert, Gary A., to Western Electric Co., Inc. Apparatus for treating portions of articles in a liquid. 4,328,087, Cl. 204-297.00W.

Masheder Design Studies Ltd.: *See—*
Masheder, Henry, 4,327,659, Cl. 114-162.000.

Masheder, Henry, to Masheder Design Studies Ltd. Minimum drag fluid reaction element and fluid control methods. 4,327,659, Cl. 114-162.000.

Mason, Claude C. Differential pumping system. 4,327,866, Cl. 239-104.000.

Mason, Stanley I., Jr.; and Scheld, H. William, to Simco, Inc. System for increasing the growth potential of hedge-row cultured perennial crop plants. 4,327,521, Cl. 47-58.000.

Mastalski, Henry; and Odom, James T., to A. B. Chance Company. Method and apparatus for extending the height of utility poles. 4,327,534, Cl. 52-122.000.

Mastarone, Dale W.: *See—*
Prentice, Robert C.; and Mastarone, Dale W., 4,328,317, Cl. 435-310.000.

Masuda, Ken: *See—*
Matsuo, Takehiko; and Masuda, Ken, 4,328,267, Cl. 427-345.000.

Masuda, Yoshitaka. High sulphate slag cement and method for manufacturing this cement. 4,328,039, Cl. 106-103.000.

Masumoto, Toshiaki; and Kuwano, Yasuhiko, to Nippon Electric Co., Ltd. Laser oscillator employing a neodymium-doped yttrium aluminate laser rod having an iron-doped layer. 4,327,492, Cl. 372-41.000.

Mathieu, Julien C.: *See—*
Kleykamp, Donald L.; and Mathieu, Julien C., 4,327,839, Cl. 213-61.000.

MATRA, A French Society: *See—*
Van den Broek, Philippe; Gaudu, Rene; and Carrier, Paul, 4,328,479, Cl. 340-58.000.

Matsuda, Shinpei: *See—*
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Matsumoto, Hiroshi: *See—*
Masaru, Ogata; and Matsumoto, Hiroshi, 4,328,344, Cl. 546-208.000.
Ogata, Masaru; Tawara, Katsuya; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Takahashi, Toshio, 4,328,348, Cl. 548-335.000.

Matsumoto, Koji: *See—*
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Matsumoto Seiyaku Kogyo Kabushiki Kaisha: *See—*
Okawara, Makoto; Takaoka, Yukihisa; Kameyama, Makoto; and Sugiyama, Iwakichi, 4,328,170, Cl. 260-465.400.

Matsumoto, Toshiaki: *See—*
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Matsunaga, Douglas: *See—*
Greinke, James; Matsunaga, Douglas; and Mosquera, Eric W., 4,327,620, Cl. 83-479.000.

Matsunaga, Isao: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.

Matsuo, Katsuharu; and Hotta, Tomio, to Tokyo Shibaura Denki Kabushiki Kaisha. Control device for a drying apparatus. 4,327,502, Cl. 34-43.000.

Matsuo, Takehiko; and Masuda, Ken, to Canon Kabushiki Kaisha. Process for producing a coating of uniform thickness of an element. 4,328,267, Cl. 427-345.000.

Matsuoka, Shigeru; Tsubaki, Toshio; Tokunaga, Takeshi; Yonekura, Seiji; Nakamura, Kenji; and Suzuki, Mituo, to Hitachi, Ltd. Door operation control apparatus. 4,328,540, Cl. 364-167.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,327,482, Cl. 29-740.000.
Nawa, Motoyuki; Sugawara, Norio; and Takahashi, Yutaka, 4,327,869, Cl. 239-590.500.
Tanaka, Toshiharu; Tsuda, Naoteru; and Arase, Kazuhide, 4,328,442, Cl. 310-326.000.
Yoshida, Tomio; Nagashima, Michiyoshi; Harigae, Shunji; Ichinose, Makoto; and Wakami, Noboru, 4,328,506, Cl. 346-108.000.

Matsuzaki, Toshio: *See—*
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Matsuzawa, Kunio: *See—*
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Mattel, Inc.: *See—*
Melzian, John M., 4,327,929, Cl. 280-282.000.
Schwager, Frederic A., 4,327,517, Cl. 46-221.000.

Matthews, Donald P.: *See—*
Daniel, John K.; Matthews, Donald P.; and Peet, Norton P., 4,328,244, Cl. 424-304.000.

Matthews, Thomas E., to Kawneer Company, Inc. Adjustable angle eave apparatus. 4,327,532, Cl. 52-92.000.

Mattka, Gunter: *See—*
Frohlich, Eckhard; and Mattka, Gunter, 4,327,906, Cl. 271-103.000.

Maurer, Barbara V.: *See—*
Haugwitz, Rudiger D.; and Maurer, Barbara V., 4,328,241, Cl. 424-300.000.

Mauser, Rudolf: *See—*
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Maxfield, Samuel W.: *See—*
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Mayer, Annedore: *See—*
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Mayer, Hildegard E.: *See—*
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Mayer, Jurgen: *See—*
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Mayer, Peter: *See—*
Vanhorebeek, Remi; Geyken, Erwin; Mayer, Peter; Schausberger, Helmut; and Brunner, Rudolf, 4,327,988, Cl. 354-320.000.

Mayer, Richard T.: *See—*
DeLoach, John R.; Harris, Robert L.; Ihler, Garret M.; and Mayer, Richard T., 4,327,710, Cl. 128-1.00R.

Mazzei, Marcello; Riocci, Mario; and Marconi, Walter, to Snamprogetti, S.p.A. Asymmetric hydrogenation of prochiral olefins by complexes of transition metals immobilized in clay-like minerals. 4,328,364, Cl. 562-401.000.

McCarthy, Robert F.: *See—*
Kliegman, Jonathan M.; and McCarthy, Robert F., 4,328,026, Cl. 71-86.000.

McCauley, Edward D.; Farlow, James C.; and Adams, William T., Jr., to American Cast Iron Pipe Company. Method of applying flux. 4,327,798, Cl. 164-56.100.

McCombs, Charles A.: *See—*
Hyatt, John A.; and McCombs, Charles A., 4,328,162, Cl. 260-397.450.

McDonald, Earl J.: *See—*
Brickman, Norman F.; and McDonald, Earl J., 4,328,543, Cl. 364-200.000.

McDonnell Douglas Corporation: *See—*
Butters, William G.; and Lee, Joseph E., 4,328,461, Cl. 324-72.000.

McDuffie, James W.; and Knepper, Larimer J., to Sperry Corporation. Variable speed indicator for combine. 4,327,544, Cl. 56-10.200.

McGibbon, Gary M.: *See—*
Gauronski, John F.; and McGibbon, Gary M., 4,327,993, Cl. 355-14.0SH.

McGovern, James R. Windspinner Faraday Principle electricity generator. 4,328,428, Cl. 290-55.000.

McGuire, Robert J.: *See—*
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,328,577, Cl. 370-84.000.

McIlrath, William P., to Racine Railroad Products, Inc. Tie adz. 4,327,785, Cl. 144-133.00B.

McIntire, Ray G.; and Colvette, Douglas. Method and apparatus for a low emission diesel engine. 4,327,676, Cl. 123-90.600.

McKee, Douglas W.: *See—*
Siemers, Paul A.; and McKee, Douglas W., 4,328,285, Cl. 428-633.000.

McKellin, Wilbur H.; Kolczynski, James R.; Mageli, Orville L.; and D'Angelo, Antonio J., to Pennwalt Corporation. Polyperoxy compounds. 4,328,360, Cl. 560-129.000.

McKibben, Gary E.; and Amneus, John S., to Procter & Gamble Company, The. Dispensing apparatus having portable means for dispensing predetermined quantity of liquid from a bulk container. 4,327,782, Cl. 141-26.000.

McLeod, Fenwick R., Jr., to TRW Inc. Current inrush limiting apparatus. 4,328,459, Cl. 323-300.000.

McMaster, Tom: *See—*
Currie, Ian; and McMaster, Tom, 4,327,543, Cl. 56-344.000.

McNamee, John J., Jr. Saw table. 4,327,619, Cl. 83-471.300.

McNeal, G. Russell; and McNeal, Joseph R. High coefficient of performance heat pump. 4,327,561, Cl. 62-324.100.

McNeal, Joseph R.: *See—*
McNeal, G. Russell; and McNeal, Joseph R., 4,327,561, Cl. 62-324.100.

McQueen, Sidney J. Submachine gun having a pistol grip 360 degrees rotative about the barrel. 4,327,626, Cl. 89-197.000.

Mead Johnson & Company: *See—*
Gabby, John L.; Ashby, Gerald K.; Cameron, Dennis W.; and Theuer, Richard C., 4,328,217, Cl. 424-195.000.

Meadows, William W., to Westeel-Rosco Limited. Assembly for actuation of openable closure lid. 4,327,522, Cl. 49-279.000.

Meakin, John D.; and Bragagnolo, Julio, to University of Delaware, The. Thin film photovoltaic cell. 4,328,390, Cl. 136-259.000.

Medem, Harald: *See—*
Schmidt, Manfred; Freitag, Dieter; Bottenbruch, Ludwig; Reinking, Klaus; Rohr, Harry; and Medem, Harald, 4,328,174, Cl. 260-930.000.

Medford, George F., to General Electric Company. Process for rapidly bodying organopolysiloxane resins. 4,328,137, Cl. 525-474.000.

Medlin, Henry C., Jr. Apparatus and method for retreading tires. 4,328,053, Cl. 156-96.000.

Mefina S.A.: *See—*
Beuchat, Roger; Charmoy, Pierre-Alain; and Damond, Remy, 4,327,625, Cl. 89-6.000.

Meier, Werner: *See*—
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Meitner, Gary H.; and Englebert, Stephen M., to Kimberly-Clark Corporation. Clean room wiper. 4,328,279, Cl. 428-289.000.
Melan, Giuseppe; Verdet, Pierre; and Besenval, Christian, to Societe Vetrotex Saint-Gobain. Process for the manufacture of fibers. 4,328,015, Cl. 65-2.000.
Melby, Curtis W. Apparatus for machining axle shafts. 4,327,613, Cl. 82-4.00R.
Melzer, Jaroslav: *See*—
Hertel, Otto; Scharf, Emil; and Melzer, Jaroslav, 4,328,142, Cl. 523-417.000.
Melzian, John M., to Mattel, Inc. Ride-on tricycle. 4,327,929, Cl. 280-282.000.
Memorex Corporation: *See*—
Tanny, Michael W., 4,327,879, Cl. 242-71.800.
Menard, Harvey. Apparatus for cutting a strip of material. 4,327,618, Cl. 83-468.000.
Menconi, Augusto: *See*—
Piccardi, Paolo; Corda, Francesco; Gozzo, Franco; Menconi, Augusto; and Longoni, Angelo, 4,328,237, Cl. 424-274.000.
Merck & Co., Inc.: *See*—
Mrozik, Helmut H., 4,328,335, Cl. 536-7.100.
Merger, Franz; and Nestler, Gerhard, to BASF Aktiengesellschaft. Preparation of methylene-bis-phenylcarbamic acid esters and polymethylene-polyphenylcarbamic acid esters. 4,328,354, Cl. 560-25.000.
Meserole, Robert H., to Manville Service Corporation. Thin-walled metal duct having integral reinforced coupling ends. 4,327,776, Cl. 138-109.000.
Messori, Vittorio: *See*—
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Metalwash Machinery Corp.: *See*—
Rath, Robert E., 4,327,756, Cl. 134-72.000.
Metropolitan Vacuum Cleaner Co., Inc.: *See*—
Gilbert, Jack J., 4,327,459, Cl. 15-321.000.
Mettler, Diethelm, to Accumold AG. Method for reforming a used tubular mold for continuous casting. 4,328,077, Cl. 204-26.000.
Metz, Fred L., to Mallinckrodt, Inc. Chemical acidogen system for foodstuffs. 4,328,115, Cl. 252-186.000.
Meyers, Phillip H.; and Greene, Franklin R., to E-Z-EM Company, Inc. Apparatus for detecting temperature variations over selected regions of living tissue, and method thereof. 4,327,742, Cl. 128-736.000.
MIC Manufacturing and Machine Works Ltd.: *See*—
Stevens, Larry G. H.; Sweet, Edmund G. F.; and Vresk, Franklin V., 4,327,790, Cl. 145-62.000.
Michel, Wolfgang; and Becker, Reinhold, to Hoechst Aktiengesellschaft. Supporting sheath for a longitudinally shirred packaging tube. 4,327,777, Cl. 138-118.100.
Micro Electronic Systems, Inc.: *See*—
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Micro-Plate, Inc.: *See*—
Fazlin, Fazal A., 4,328,081, Cl. 204-192.00E.
Midland-Ross Corporation: *See*—
Smith, Richard A., 4,328,532, Cl. 362-19.000.
Midway Fishing Tool Co.: *See*—
Reed, Leaman T., 4,327,804, Cl. 166-97.000.
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Nishimura, Tatsuo; Mifune, Hiroyuki; Fuseya, Yoshiharu; Urata, Yukihide; Shishido, Tadao; and Kasama, Yasuo, 4,328,302, Cl. 430-264.000.
Milhem, Robert; Eisenberg, Steven K.; and Hancock, Mark W., to Whittaker Corporation. Harvester. 4,327,538, Cl. 56-1.000.
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Miller, Irving L.: *See*—
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Miller, Kenneth J., to Caterpillar Tractor Co. Method of manufacturing heat exchanger core and assembly therefor. 4,327,800, Cl. 165-79.000.
Miller, Rex B., Jr.; and Rudy, Manfred. Apparatus for shingling tickets. 4,328,064, Cl. 156-558.000.
Milligan, Thelma K., administratrix: *See*—
Pettyjohn, William H.; Lewis, John T.; and Milligan, William E., deceased, 4,327,526, Cl. 51-245.000.
Milligan, William E., deceased: *See*—
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Milliken Research Corporation: *See*—
Wilson, Michael E., 4,328,041, Cl. 106-308.00Q.
Millis, Andrew D., to Wimpey Laboratories Limited. Slurry producing apparatus. 4,327,759, Cl. 137-3.000.
Mills, David R.: *See*—
Giutronich, John E.; and Mills, David R., 4,327,969, Cl. 350-296.000.
Mills, King L.: *See*—
Cheng, Paul J.; and Mills, King L., 4,328,199, Cl. 423-450.000.
Minalga, Philip F.: *See*—
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Minami, Syuji; Ueda, Takashi; Kioka, Mamoru; and Kashiwa, Norio, to Mitsui Petrochemical Industries Ltd. Continuous process for production of olefin polymers or copolymers. 4,328,328, Cl. 526-125.000.
Minnesota Mining and Manufacturing Co.: *See*—
Anders, Leon W.; and Weigel, David C., 4,328,181, Cl. 422-56.000.
Harrison, Kenneth J., 4,328,116, Cl. 252-299.630.
Huizinga, John S.; and Stevens, John, 4,328,280, Cl. 428-411.000.
Kroeger, Frederick R., Jr.; and Norquist, Richard A., 4,328,441, Cl. 310-319.000.
Lightfoot, Clinton W., 4,327,875, Cl. 242-55.530.
Tarbutton, Kent S.; and Zemke, Ronald O., 4,328,274, Cl. 428-149.000.
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Tominaga, Shinji; and Matsumoto, Toshiaki, 4,327,979, Cl. 354-105.000.
Minoura, Kazuo; Kiyohara, Takehiko; and Saito, Jun, to Canon Kabushiki Kaisha. Two-dimensional scanning device with deflection scanning plane and optic axis maintained parallel. 4,327,959, Cl. 350-6.300.
Minter, Jerry B. Reduced insertion force connector. 4,327,955, Cl. 339-74.00R.
Miranday, Jean-Pierre; Jacoboni, Charles; and de Pape, Robert, to Agence Nationale de Valorisation de la Recherche (ANVAR). Glasses containing fluorine, their preparation and their application. 4,328,318, Cl. 501-40.000.
Misawa, Yoshihiko: *See*—
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,327,482, Cl. 29-740.000.
Mita Industrial Company Limited: *See*—
Kato, Mamoru; Yamaura, Susumu; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 4,328,265, Cl. 427-146.000.
Mitchell, James: *See*—
Smith, David K.; Harlow, Nigel; Maxfield, Samuel W.; and Mitchell, James, 4,327,631, Cl. 99-277.200.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Tsurumi, Yoshihiro; Fujioka, Tomio; Matsuzaki, Toshio; and Wakabayashi, Hidechika, 4,328,312, Cl. 435-192.000.
Yoshinaka, Shigeo; and Doya, Masaharu, 4,328,374, Cl. 568-436.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Hirakawa, Tadashi; and Satou, Hiroshi, 4,327,854, Cl. 226-95.000.
Mitsui Engineering and Shipbuilding Co., Ltd.: *See*—
Yamanaka, Koichi; Yamasaki, Ryuzo; Sakai, Yoshiharu; and Hirono, Takashi, 4,327,469, Cl. 29-407.000.
Mitsui Petrochemical Industries Ltd.: *See*—
Minami, Syuji; Ueda, Takashi; Kioka, Mamoru; and Kashiwa, Norio, 4,328,328, Cl. 526-125.000.
Mori, Akira; Noda, Sekijiro; Osuo, Hiroshi; Kanazawa, Akio; Nishimura, Tadahiko; Yamamoto, Masatoshi; and Tomatsu, Yoshio, 4,328,377, Cl. 568-798.000.
Mitutoyo Mfg. Co., Ltd.: *See*—
Takahashi, Seigo, 4,327,494, Cl. 33-172.00E.
Miyagawa, Shinichi: *See*—
Yoneda, Tetsuzo; Sogo, Yoshitaka; Fukushima, Masami; and Miyagawa, Shinichi, 4,327,598, Cl. 74-467.000.
Miyamoto, Hiroyuki: *See*—
Nodera, Hisatoshi; Yamasaki, Hiroyuki; Miyamoto, Hiroyuki; and Ueda, Kenji, 4,328,433, Cl. 307-311.000.
Miyata, Hirotaka: *See*—
Tanaka, Atsushi; Chiba, Toshiyuki; and Miyata, Hirotaka, 4,328,327, Cl. 526-66.000.
Miyazaki, Yukio: *See*—
Sugawara, Hideo; Miyazaki, Yukio; and Seino, Akio, 4,328,211, Cl. 424-117.000.
Mizoguchi, Toshimi: *See*—
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, 4,328,307, Cl. 435-80.000.
Mizuno, Toshio; and Muratani, Takuro, to Kokusai Denshin Denwa Kabushiki Kaisha. Phase slip detector and systems employing the detector. 4,328,587, Cl. 375-97.000.
MKS Instruments, Inc.: *See*—
Ewing, James H.; and Clark, William R., 4,327,894, Cl. 251-233.000.
Mobay Chemical Corporation: *See*—
Sandefur, Charles W.; Lindow, Donald F.; and Thomas, Thomas J., 4,327,998, Cl. 8-524.000.
Moberly, Charles W., to Phillips Petroleum Company. Color stabilization of flame retardant. 4,328,132, Cl. 252-606.000.
Mobil Oil Corporation: *See*—
Angevine, Philip J.; and Oleck, Stephen M., 4,328,127, Cl. 252-439.000.
Daviduk, Nicholas; and Haddad, James H., 4,328,384, Cl. 585-469.000.
Heiba, El-Ahmadi I.; and Dessau, Ralph M., 4,328,363, Cl. 560-82.000.
Horodysky, Andrew G.; Kaminski, Joan M.; Ashjian, Henry; and Gawel, Henry A., 4,328,113, Cl. 252-49.600.
Mochida, Yasunori; Nonaka, Terumoto; and Hanagasaki, Osamu, to Nippon Gakki Seizo Kabushiki Kaisha. Reference frequency signal generator for tuning apparatus. 4,327,623, Cl. 84-454.000.
Molari, Richard E., Jr., to General Electric Company. Impact resistant laminate. 4,328,277, Cl. 428-215.000.
Mollat du Jourdin, Patrick: *See*—
Battail, Gerard; and Mollat du Jourdin, Patrick, 4,328,582, Cl. 371-37.000.

Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Jr., 4,327,640, Cl. 101-110.000.
Monsen, Peter, to Signatron, Inc. Fast adapting fading channel equalizer. 4,328,585, Cl. 375-14.000.
Monte, Antonio; and Cecchin, Giuliano, to Montedison S.p.A. Components of catalysts for the polymerization of olefins. 4,328,122, Cl. 252-429.00B.
Montedison S.p.A.: *See*—
Giordano, Claudio; and Casagrande, Francesco, 4,328,356, Cl. 560-56.000.
Monte, Antonio; and Cecchin, Giuliano, 4,328,122, Cl. 252-429.00B.
Piccardi, Paolo; Corda, Francesco; Gozzo, Franco; Menconi, Augusto; and Longoni, Angelo, 4,328,237, Cl. 424-274.000.
Montress, Gary K.; and Grudkowski, Thomas W., to United Technologies Corporation. Isolated gate, programmable internal mixing saw signal processor. 4,328,473, Cl. 333-154.000.
Moore, Fred W.: *See*—
Tsigdinos, George A.; Weber, Thomas R.; and Moore, Fred W., 4,328,152, Cl. 524-406.000.
Moore, Paul M.: *See*—
Dickey, Joseph W.; Moore, Paul M.; and Powell, Lloyd E., 4,327,576, Cl. 73-40.50A.
Morgan, Hugh T.; and Glatz, Walter, to Picker Corporation. Magnetic field correction method and apparatus. 4,328,418, Cl. 250-213.0VT.
Mori, Akira; Noda, Sekijiro; Osuo, Hiroshi; Kanazawa, Akio; Nishimura, Tadahiko; Yamamoto, Masatoshi; and Tomatsu, Yoshio, to Mitsui Petrochemical Industries Ltd. Process for producing phenolic compounds. 4,328,377, Cl. 568-798.000.
Mori, Fumio; and Ishibashi, Kazuhisa, to Toyo Seikan Kaisha, Ltd. Metal cap and its method of manufacture. 4,327,840, Cl. 215-349.000.
Mori, Kazuhiro: *See*—
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,327,482, Cl. 29-740.000.
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, to Kowa Company, Ltd. Novel antibiotics, process for preparation thereof and biologically pure culture for use therein. 4,328,307, Cl. 435-80.000.
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shinpei; Nishimura, Tsukasa; and Nishimura, Yasuyuki, to Babcock-Hitachi, Ltd. Process for desulfurizing combustion exhaust gases. 4,328,195, Cl. 423-242.000.
Morisawa, Masaomi: *See*—
Yamazaki, Kazuhide; Morisawa, Masaomi; and Nakajima, Maki, 4,327,645, Cl. 104-13.000.
Moritsch, Fred A. Handle for tool having a tang. 4,327,465, Cl. 29-80.000.
Moritz, Christian: *See*—
Moritz, Eugen; and Moritz, Christian, 4,328,100, Cl. 210-304.000.
Moritz, Eugen; and Moritz, Christian, to Filtroba AG. Filter device with a chamber, a helicoidally conformed support and a filter retained by the support. 4,328,100, Cl. 210-304.000.
Moro, Kanji: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.
Morris, Albert E. Tool for removing lids from tins. 4,327,607, Cl. 81-3.360.
Morse, Lewis D.; and Dixon, Kenneth W., to Calgon Corporation. Polymerization method utilizing a three-phase emulsion system. 4,328,149, Cl. 524-458.000.
Mortin, Harold S. Combination lock mechanism. 4,327,565, Cl. 70-303.00R.
Moser, Erwin: *See*—
Efinger, Arnold; Moser, Erwin; and Wessing, Egon, 4,328,430, Cl. 307-114.000.
Moser, Franz, to Moser, Franz; and Lenz, Hans Peter. Air-fuel-mixture forming device for spark ignition internal combustion engines. 4,327,691, Cl. 123-478.000.
Mosquera, Eric W.: *See*—
Greinke, James; Matsunaga, Douglas; and Mosquera, Eric W., 4,327,620, Cl. 83-479.000.
Mostek Corporation: *See*—
Schroeder, Paul R., 4,328,563, Cl. 365-104.000.
Motor Wheel Corporation: *See*—
Strader, Don S., 4,327,791, Cl. 152-158.000.
Motorola Inc.: *See*—
Bell, Robert R.; and Christians, Scott T., 4,328,578, Cl. 370-100.000.
Clark, Alfred J., 4,328,475, Cl. 334-7.000.
Irving, Donald E., 4,327,660, Cl. 116-257.000.
Musa, Fuad H.; and Shaw, Pern, 4,328,558, Cl. 364-900.000.
Moulin, Maurice, to Commissariat a l'Energie Atomique. Device for guiding ducts which extend through a rotatable component. 4,328,071, Cl. 376-245.000.
Mrozik, Helmut H., to Merck & Co., Inc. Process for the interconversion of C-076 compounds. 4,328,335, Cl. 536-7.100.
Mt. Sinai School of Medicine of the City University of New York: *See*—
Rosenfield, Richard E.; and Kochwa, Shaul, 4,328,183, Cl. 422-57.000.
Muehlberger, Erich; and Kremith, Roland D., to Electro-Plasma, Inc. System and method for plasma coating. 4,328,257, Cl. 427-34.000.
Muellejans, Herbert; and Koetz, Hans-Joachim, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. Arrangements for cross-flow heat exchanger units. 4,327,803, Cl. 165-166.000.
Muenger, James R.; Child, Edward T.; and Brent, Albert, to Texaco Development Corporation. Apparatus for the production of cleaned and cooled synthesis gas. 4,328,006, Cl. 48-62.00R.
Muenger, James R.; Child, Edward T.; and Brent, Albert, to Texaco Development Corporation. Method for the production of cleaned and cooled synthesis gas. 4,328,008, Cl. 48-197.00R.
Mues, Volker; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. 2-Substituted benzazole pesticide synergists. 4,328,219, Cl. 424-200.000.
Muetzel, Wolfgang: *See*—
Gries, Heinz; Pfeiffer, Heinrich; Speck, Ulrich; and Muetzel, Wolfgang, 4,328,202, Cl. 424-5.000.
Mukaiyama, Teruaki; and Sakito, Yoji, to Sumitomo Chemical Company, Limited. 2,6-Dimethyl-6-heptene-1,2-diol. 4,328,378, Cl. 568-857.000.
Muller, Heinz: *See*—
Haas, Peter; Muller, Heinz; Seifert, Peter; Wagner, Kuno; Findeisen, Kurt; and Konig, Klaus, 4,328,321, Cl. 521-108.000.
Muller, Josef, to Balzer & Droll. Process for forming the winding cores of stators or rotors of electric machines. 4,327,478, Cl. 29-596.000.
Muller, Leo; and Koder, Walter, to SKF Kugellagerfabriken GmbH. Clutch release device. 4,327,823, Cl. 192-98.000.
Muller, Ralph C.; and Decker, Thomas R., to Texaco Inc. Underground tank fill pipe combination. 4,327,769, Cl. 137-587.000.
Murakami, Hiroyasu: *See*—
Yamamichi, Masayoshi; Suzuki, Masayuki; Murakami, Hiroyasu; and Ito, Tadashi, 4,327,982, Cl. 354-156.000.
Murata Manufacturing Co., Ltd.: *See*—
Murata, Michihiro; and Okabe, Shinsei, 4,328,478, Cl. 338-35.000.
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,328,048, Cl. 148-6.310.
Murata, Michihiro; and Okabe, Shinsei, to Murat.: Manufacturing Co., Ltd. Humidity sensitive device. 4,328,478, Cl. 338-35.000.
Muratani, Takuro: *See*—
Mizuno, Toshio; and Muratani, Takuro, 4,328,587, Cl. 375-97.000.
Murphy, John C.: *See*—
Patil, Ulhas S.; Honath, Harold F.; and Murphy, John C., 4,327,554, Cl. 62-45.000.
Murray, E. Donald; Barker, Larry D.; and Woodman, Brenda J., to General Foods Inc. Production of protein fibres. 4,328,252, Cl. 426-262.000.
Musa, Fuad H.; and Shaw, Pern, to Motorola, Inc. RAM Address enable circuit for a microprocessor having an on-chip RAM. 4,328,558, Cl. 364-900.000.
Musall, Reimar; and Wolsing, Wilhelm, to Kali-Chemie AG. Elastic suspension for a monolithic catalyzer body in an exhaust gas cleaning device. 4,328,187, Cl. 422-179.000.
Myers, Ronald W.: *See*—
Hughes, Donald W. K.; Myers, Ronald W.; and Weidler, Charles H., 4,327,958, Cl. 339-276.0SF.
NAD International: *See*—
Kurtin, Stephen; and Kelm, Edward, 4,328,573, Cl. 369-53.000.
Nagabushi, Hiromi: *See*—
Hashimoto, Shinichiro; and Nagabushi, Hiromi, 4,328,579, Cl. 370-111.000.
Nagase, Hiroshi, to Takeda Chemical Industries, Ltd. Tetrahydrophthalamide derivatives. 4,328,367, Cl. 564-155.000.
Nagase, Hiroshi: *See*—
Okuyama, Toshiaki; and Nagase, Hiroshi, 4,328,454, Cl. 318-803.000.
Nagashima, Michiyoshi: *See*—
Yoshida, Tomio; Nagashima, Michiyoshi; Harigae, Shunji; Ichinose, Makoto; and Wakami, Noboru, 4,328,506, Cl. 346-108.000.
Nagashima, Toshio; Saitoh, Takeshi; Hatashita, Hiroshi; and Shinagawa, Mitsuhisa, to Hitachi, Ltd. Thick film multilayer substrate. 4,328,531, Cl. 361-401.000.
Naiman, Alaric: *See*—
Vollhardt, K. Peter C.; and Naiman, Alaric, 4,328,343, Cl. 546-145.000.
Nakadate, Takanori; Abe, Naoto; Kitahara, Kenichi; and Nakao, Hironobu, to Konishiroku Photo Industry Co., Ltd. Photographic polyester supports subjected to subbing treatment. 4,328,283, Cl. 428-480.000.
Nakagawa, Hisahide, to Citizen Watch Company Limited. Electronic timepiece with illumination lamp battery voltage drop compensation circuit. 4,328,570, Cl. 368-67.000.
Nakagawa, Takuji: *See*—
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,328,048, Cl. 148-6.310.
Nakaji, Shigeru: *See*—
Yanagida, Yoshitsugu; Higuchi, Mitsuo; Ito, Yoshiaki; Nakaji, Shigeru; and Ehiro, Syogo, 4,327,466, Cl. 29-90.00R.
Nakajima, Maki: *See*—
Yamazaki, Kazuhide; Morisawa, Masaomi; and Nakajima, Maki, 4,327,645, Cl. 104-13.000.
Nakajima, Yukihiko; Ohkubo, Mitsuru; Hashimoto, Tadakatsu; and Nakamura, Shigeki, to Kabushiki Kaisha Yokota. Horizontal type blind. 4,327,797, Cl. 160-168.00R.
Nakamura, Kenji: *See*—
Matsuoka, Shigeru; Tsubaki, Toshio; Tokunaga, Takeshi; Yonekura, Seiji; Nakamura, Kenji; and Suzuki, Mituo, 4,328,540, Cl. 364-167.000.

Nakamura, Masaaki; and Ueba, Hisaaki, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Kureha Gosen Kabushiki Kaisha. Gut. 4,328,055, Cl. 156-167.000.
Nakamura, Shigeki: *See*—
Nakajima, Yukihiko; Ohkubo, Mitsuru; Hashimoto, Tadakatsu; and Nakamura, Shigeki, 4,327,797, Cl. 160-168.00R.
Nakano, Tsuyoshi: *See*—
Hamai, Kyugo; Nakano, Tsuyoshi; and Uchida, Yoshimi, 4,327,698, Cl. 123-568.000.
Nakao, Hironobu: *See*—
Nakadate, Takanori; Abe, Naoto; Kitahara, Kenichi; and Nakao, Hironobu, 4,328,283, Cl. 428-480.000.
Nakashima, Akio; and Okamoto, Yoshimasa, to Hitachi, Ltd. CRT Drive circuit comprising white and black level clamping circuitry. 4,328,514, Cl. 358-33.000.
Nakata, Sinji; Nishimura, Yutaka; and Ueki, Susumu, to Nissan Motor Company, Limited. Stabilizing device for a carriage travelling along an aerial transporting way. 4,327,646, Cl. 104-89.000.
Nakayama, Haruhiko; Uchida, Kiyoshi; Sugiyama, Masahiko; and Konishi, Hiromu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Ishizuka Glass Co., Ltd. Disc brake and method of manufacturing the same. 4,327,820, Cl. 188-370.000.
Nakayama, Masahito: *See*—
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, 4,328,307, Cl. 435-80.000.
Nametkin, Nikolai S.: *See*—
Guselnikov, Leonid E.; Polyakov, Jury P.; Volnina, Elvira A.; and Nametkin, Nikolai S., 4,328,350, Cl. 556-406.000.
Namura, Shigekazu: *See*—
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Nassau Recycle Corporation: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,327,617, Cl. 83-419.000.
Natansohn, Samuel: *See*—
Su, Sophia R.; and Natansohn, Samuel, 4,328,191, Cl. 423-54.000.
National Grondbezit N.V.: *See*—
van der Laan, Jan G., 4,327,524, Cl. 49-425.000.
National Petro Chemicals Corp.: *See*—
Speca, Anthony N.; Katzen, Stanley J.; and Rekers, Louis J., 4,328,124, Cl. 252-430.000.
National Research Development Corporation: *See*—
Froome, Keith D., 4,327,585, Cl. 374-45.000.
Shanks, Ian A.; Clark, Michael G.; and Leslie, Frank M., 4,328,493, Cl. 340-784.000.
Nawa, Motoyuki; Sugawara, Norio; and Takahashi, Yutaka, to Matsushita Electric Industrial Co., Ltd. Fluid deflecting assembly. 4,327,869, Cl. 239-590.500.
NCR Corporation: *See*—
Weber, Helmut; and Reitberger, Peter H., 4,328,504, Cl. 346-75.000.
Neathery, David O.: *See*—
Kincheloe, David W.; and Neathery, David O., 4,328,065, Cl. 156-502.000.
Nebashi, Toshiyuki: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.
Nederlandse Organisatie voor Tiegeoast- Natyyrwetebscgaooekuhj Ibderziej ten behoeve van Nijverheid Handel en Verkeer: *See*—
Kock, Theodorus J. J. M.; and Smits, Jacobus J. G., 4,328,324, Cl. 525-423.000.
Negurosu Electrical Ind. Co. Ltd.: *See*—
Kumakura, Masaaki, 4,327,887, Cl. 248-73.000.
Nelb, Robert G., II: *See*—
Chen, Augustin T.; Nelb, Robert G., II; and Onder, Kemal B., 4,328,331, Cl. 528-288.000.
Nelson, Erik B.; and Eilers, Louis H., to Dow Chemical Company, The. High temperature expanding cement composition and use. 4,328,036, Cl. 106-85.000.
Nelson, Philip A. Bounceless high pressure drop cascade impactor and a method for determining particle size distribution of an aerosol. 4,327,594, Cl. 73-863.220.
Nester, James F., to Perkin-Elmer Corporation, The. Process for manufacturing lithography masks. 4,328,298, Cl. 430-5.000.
Nestler, Gerhard: *See*—
Merger, Franz; and Nestler, Gerhard, 4,328,354, Cl. 560-25.000.
Neti, Radhakrishna M.; and Harman, John N., III, to Beckman Instruments, Inc. Solid state ion-sensitive electrode and method of making said electrode. 4,328,082, Cl. 204-195.00G.
Neufeld, Alonzo J. Resilient sling. 4,327,909, Cl. 272-137.000.
Neumeier, Paul J.: *See*—
Kalthoff, Robert J.; and Neumeier, Paul J., 4,327,834, Cl. 209-609.000.
NGK Insulators, Ltd.: *See*—
Wada, Shigetaka; and Yamada, Toshio, 4,327,697, Cl. 123-549.000.
NGK Spark Plug Co., Ltd.: *See*—
Takami, Akio; Saito, Tsutomu; and Tanaka, Kazutoshi, 4,328,477, Cl. 338-34.000.
Ngo, Peter D. T., to Bell Telephone Laboratories, Incorporated. Self-shift ac plasma panel using transport of charge cloud charge. 4,328,489, Cl. 340-713.000.
Nicholson, Raymond W., to Coin Mechanisms, Inc. Cheat preventing device for coin machines. 4,327,824, Cl. 194-9.00R.
Nickerson, Jack A. Solar pond apparatus. 4,327,706, Cl. 126-422.000.
Nihashi, Iwao: *See*—
Hamanishi, Yoichi; Honma, Akiteru; Nihashi, Iwao; and Tanii, Seisuke, 4,327,569, Cl. 72-239.000.
Nikolayczik, Hans, to American Standard Inc. Sanitary water valve. 4,327,771, Cl. 137-625.400.
Nip, Wing S.: *See*—
Hackett, Peter A.; Nip, Wing S.; and Willis, Clive, 4,328,078, Cl. 204-158.00R.
Nippon Electric Co., Ltd.: *See*—
Kondo, Michikazu; Ohta, Yoshinori; and Sakaguchi, Mitsuhito, 4,327,971, Cl. 350-388.000.
Masumoto, Toshiaki; and Kuwano, Yasuhiko, 4,327,492, Cl. 372-41.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Aoki, Eiichiro, 4,327,622, Cl. 84-1.030.
Mochida, Yasunori; Nonaka, Terumoto; and Hanagasaki, Osamu, 4,327,623, Cl. 84-454.000.
Ogita, Minoru, 4,328,589, Cl. 455-159.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Suzuki, Gyoichi; Shimotsuma, Teruo; Higuchi, Masaaki; Sugawara, Tsunenori; and Yano, Takeshi, 4,327,899, Cl. 266-193.000.
Nippon Kokuyu Tetsudo: *See*—
Yamazaki, Kazuhide; Morisawa, Masaomi; and Nakajima, Maki, 4,327,645, Cl. 104-13.000.
Nippon Paint Company, Ltd.: *See*—
Izumi, Minao; Sobata, Tamotsu; Ishikura, Shinichi; and Ishii, Keizou, 4,328,143, Cl. 523-412.000.
Nippon Soken, Inc.: *See*—
Akutagawa, Kenichi; Yoshida, Hitoshi; Hattori, Tadashi; Takata, Akira; and Fukuda, Tamotsu, 4,327,685, Cl. 123-402.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
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Hashimoto, Shinichiro; and Nagabushi, Hiromi, 4,328,579, Cl. 370-111.000.
Isobe, Minoru; Ishii, Etumi; Imai, Shuichi; Kodama, Tadasi; and Ohara, Wataru, 4,327,856, Cl. 226-162.000.
Kawaguchi, Masaharu; Shiraishi, Yoshikatu; Maruyama, Kazuhiro; Imagawa, Hitoshi; and Kaneko, Yoshimasa, 4,328,398, Cl. 179-84.0VF.
Nippondenso Co. Ltd.: *See*—
Harada, Susumu, 4,327,682, Cl. 123-326.000.
Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, 4,328,294, Cl. 429-193.000.
Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, 4,328,295, Cl. 429-193.000.
Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, 4,328,296, Cl. 429-193.000.
Nishi, Yoshio: *See*—
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Nishimura, Tadahiko: *See*—
Mori, Akira; Noda, Sekijiro; Osuo, Hiroshi; Kanazawa, Akio; Nishimura, Tadahiko; Yamamoto, Masatoshi; and Tomatsu, Yoshio, 4,328,377, Cl. 568-798.000.
Nishimura, Tatsuo; Mifune, Hiroyuki; Fuseya, Yoshiharu; Urata, Yukihide; Shishido, Tadao; and Kasama, Yasuo, to Fuji Photo Film Co., Ltd. Lithographic silver halide photographic light-sensitive material. 4,328,302, Cl. 430-264.000.
Nishimura, Tsukasa: *See*—
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shinpei; Nishimura, Tsukasa; and Nishimura, Yasuyuki, 4,328,195, Cl. 423-242.000.
Nishimura, Yasuyuki: *See*—
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shinpei; Nishimura, Tsukasa; and Nishimura, Yasuyuki, 4,328,195, Cl. 423-242.000.
Nishimura, Yutaka: *See*—
Nakata, Sinji; Nishimura, Yutaka; and Ueki, Susumu, 4,327,646, Cl. 104-89.000.
Nissan Motor Co., Ltd.: *See*—
Hamai, Kyugo; Nakano, Tsuyoshi; and Uchida, Yoshimi, 4,327,698, Cl. 123-568.000.
Imai, Iwao; and Sone, Masazumi, 4,327,702, Cl. 123-620.000.
Nakata, Sinji; Nishimura, Yutaka; and Ueki, Susumu, 4,327,646, Cl. 104-89.000.
Takei, Hirofumi, 4,327,674, Cl. 123-41.120.
Nissha Printing Co., Ltd.: *See*—
Tsuji, Yoshiharu; and Namura, Shigekazu, 4,328,268, Cl. 428-40.000.
Nixdorf Computer AG: *See*—
Pollmeier, Werner, 4,328,538, Cl. 363-56.000.
Noble, Robert T., to Texas Instruments Incorporated. Rapid start oscillator latch. 4,328,571, Cl. 368-87.000.
Noda, Sekijiro: *See*—
Mori, Akira; Noda, Sekijiro; Osuo, Hiroshi; Kanazawa, Akio; Nishimura, Tadahiko; Yamamoto, Masatoshi; and Tomatsu, Yoshio, 4,328,377, Cl. 568-798.000.
Nodera, Hisatoshi; Yamasaki, Hiroyuki; Miyamoto, Hiroyuki; and Ueda, Kenji, to Omron Tateisi Electronics Co. Proximity switch. 4,328,433, Cl. 307-311.000.
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Mochida, Yasunori; Nonaka, Terumoto; and Hanagasaki, Osamu, 4,327,623, Cl. 84-454.000.
Norden Laboratories, Inc.: *See*—
Kucera, Carrell J., 4,328,210, Cl. 424-92.000.

Nordson Corporation: *See*—
Kemble, Richard E., 4,328,387, Cl. 219-517.000.
Noren, Gerry K.: *See*—
Lin, Shiow-Ching; and Noren, Gerry K., 4,328,138, Cl. 525-451.000.
Norquist, Richard A.: *See*—
Kroeger, Frederick R., Jr.; and Norquist, Richard A., 4,328,441, Cl. 310-319.000.
Norris, Carroll B., Jr.; Silzars, Aris; and Bates, David J., to Watkins-Johnson Company. Electron bombarded semiconductor device with doubly-distributed deflection means. 4,328,466, Cl. 330-308.000.
North Atlantic Industries, Inc.: *See*—
Wassermann, Carl I., 4,327,638, Cl. 101-93.090.
North, Desmond J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Auto-ranging ultrasonic attenuation meters. 4,327,588, Cl. 73-599.000.
Northern Border Pipeline Company: *See*—
Somerville, Francis S., 4,327,473, Cl. 29-447.000.
Northern Telecom Limited: *See*—
Perks, Roger; and Dudley, Phillip J., 4,328,399, Cl. 179-90.00K.
Norvidan Engineering ApS: *See*—
Larsen, Ebbe B. B., 4,327,871, Cl. 241-18.000.
Nostrand, Elbert D.: *See*—
Ryer, Jack; Brois, Stanley J.; and Nostrand, Elbert D., 4,328,003, Cl. 44-53.000.
Noto, Takao: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.
Novak, Ernest R., to Du Pont de Nemours, E. I., and Company. Process for polymerizing methyl methacrylate syrup using a dual initiator system. 4,328,329, Cl. 526-218.000.
Novakosky, James T. Method and apparatus for protecting a floor safe from water damage. 4,327,651, Cl. 109-68.000.
Nowakowski, Peter M.: *See*—
Boberski, William G.; Nowakowski, Peter M.; and Seiner, Jerome A., 4,328,033, Cl. 106-74.000.
Nozick, Jacques E., to C.T.M. Cable head with protection for a telephone exchange distributor. 4,328,524, Cl. 361-119.000.
NSK-Warner K.K.: *See*—
Yamamoto, Kazuo, 4,327,883, Cl. 242-107.40A.
Nussbaumer, Henri J., to International Business Machines Corporation. Apparatus for computing two-dimensional discrete Fourier transforms. 4,328,555, Cl. 364-726.000.
O. K. Partnership: *See*—
Kalthoff, Robert J.; and Neumeier, Paul J., 4,327,834, Cl. 209-609.000.
Oakley, William S., to Itek Corporation. Wide band demodulator of phase modulated signals. 4,328,576, Cl. 370-3.000.
Obata, Masatoshi; and Satoh, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for internal combustion engines. 4,327,700, Cl. 123-571.000.
O'Connor, Dennis R., to Chloride, Incorporated. Ionization detector chamber. 4,328,424, Cl. 250-384.000.
Oda, Takeshi: *See*—
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahito; Ito, Hisakatsu; and Oda, Takeshi, 4,328,307, Cl. 435-80.000.
Odermann, Charles R.; Brauch, Robert B.; and Minalga, Philip F., to Singer Company, The. Basting stitch overthrow system. 4,327,654, Cl. 112-158.00E.
Odom, James T.: *See*—
Mastalski, Henry; and Odom, James T., 4,327,534, Cl. 52-122.000.
Oetjen, Georg-Wilhelm; and Benthin, Frank, to Dragerwerk Aktiengesellschaft. Humidity exchanger for a breathing apparatus. 4,327,717, Cl. 128-201.130.
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., to Haggar Company. Apparatus for depositing adhesive strips. 4,328,061, Cl. 156-353.000.
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., to Haggar Company. Apparatus for depositing adhesive strips. 4,328,062, Cl. 156-353.000.
Ogata, Masaru; Tawara, Katsuya; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Takahashi, Toshio, to Shionogi & Co., Ltd. Novel benzylimidazole derivatives. 4,328,348, Cl. 548-335.000.
Ogawa, Haruki: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.
Ogawa, Masaki; Hirata, Yasushi; and Ikegami, Mikihiko, to Bridgestone Tire Company Limited. Organic micro-fiber reinforced rubber compositions. 4,328,133, Cl. 524-505.000.
Ogier, Leonard J.: *See*—
Anderson, Donald W.; and Ogier, Leonard J., 4,328,499, Cl. 343-113.00R.
Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. System for indicating multipath interference in radio receiver. 4,328,589, Cl. 455-159.000.
Ogle, Norman E.: *See*—
Slivinsky, Sandra H.; and Ogle, Norman E., 4,328,410, Cl. 219-121.0LJ.
Ohara, Wataru: *See*—
Isobe, Minoru; Ishii, Etumi; Imai, Shuichi; Kodama, Tadasi; and Ohara, Wataru, 4,327,856, Cl. 226-162.000.
Ohkawa, Yasuhiro; and Saito, Takashi, to Canon Kabushiki Kaisha. Wet type electrostatic image developing device. 4,327,664, Cl. 118-661.000.
Ohkubo, Mitsuru: *See*—
Nakajima, Yukihiko; Ohkubo, Mitsuru; Hashimoto, Tadakatsu; and Nakamura, Shigeki, 4,327,797, Cl. 160-168.00R.
Ohta, Yoshinori: *See*—
Kondo, Michikazu; Ohta, Yoshinori; and Sakaguchi, Mitsuhito, 4,327,971, Cl. 350-388.000.
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, to Chugai Seiyaku Kabushiki Kaisha. Cephalosporin derivatives. 4,328,224, Cl. 424-246.000.
Okabe, Shinsei: *See*—
Murata, Michihiro; and Okabe, Shinsei, 4,328,478, Cl. 338-35.000.
Okada, Toshiro: *See*—
Inaba, Shosei; and Okada, Toshiro, 4,327,831, Cl. 206-310.000.
Okamoto, Yoshimasa: *See*—
Nakashima, Akio; and Okamoto, Yoshimasa, 4,328,514, Cl. 358-33.000.
Okawara, Makoto; Takaoka, Yukihisa; Kameyama, Makoto; and Sugiyama, Iwakichi, to Matsumoto Seiyaku Kogyo Kabushiki Kaisha. Process for preparing an α-cyanoacrylate. 4,328,170, Cl. 260-465.400.
Okazaki, Hiroshi: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,328,224, Cl. 424-246.000.
Okazaki, Tatsuo: *See*—
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Okazaki, Yasukichi; and Okazaki, Tatsuo, to Kabushikigaisha Omco. Multi therapeutic device for use in dynamic therapy. 4,327,713, Cl. 128-33.000.
Oki Electric Industry Co., Ltd.: *See*—
Isobe, Minoru; Ishii, Etumi; Imai, Shuichi; Kodama, Tadasi; and Ohara, Wataru, 4,327,856, Cl. 226-162.000.
Kawaguchi, Masaharu; Shiraishi, Yoshikatu; Maruyama, Kazuhiro; Imagawa, Hitoshi; and Kaneko, Yoshimasa, 4,328,398, Cl. 179-84.0VF.
Okuno, Benjamin T. Portable bottle storage device. 4,327,836, Cl. 211-74.000.
Okuyama, Toshiaki; and Nagase, Hiroshi, to Hitachi, Ltd. Apparatus for controlling ac motor. 4,328,454, Cl. 318-803.000.
Oleck, Stephen M.: *See*—
Angevine, Philip J.; and Oleck, Stephen M., 4,328,127, Cl. 252-439.000.
Olin Corporation: *See*—
Avery, Cecil T., 4,328,549, Cl. 364-469.000.
Larson, Harold V., 4,328,193, Cl. 423-166.000.
Oliver, Robert L. Identification device. 4,327,512, Cl. 40-2.00E.
Olsen, Gregory H.: *See*—
Kressel, Henry; and Olsen, Gregory H., 4,328,508, Cl. 357-16.000.
Olympic Aluminum Mfg., Ltd.: *See*—
Rochman, Itzchak, 4,327,796, Cl. 160-101.000.
Olympus Optical Co., Ltd.: *See*—
Takagi, Takeji, 4,327,711, Cl. 128-4.000.
Omron Tateisi Electronics Co.: *See*—
Nodera, Hisatoshi; Yamasaki, Hiroyuki; Miyamoto, Hiroyuki; and Ueda, Kenji, 4,328,433, Cl. 307-311.000.
Onder, Kemal B.: *See*—
Chen, Augustin T.; Nelb, Robert G., II; and Onder, Kemal B., 4,328,331, Cl. 528-288.000.
O'Neil, Richard J.; and Dunigan, Francis P. Odometer. 4,328,413, Cl. 235-92.0DN.
Ono, Saichi: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, 4,328,337, Cl. 536-119.000.
Ono, Toshihiko: *See*—
Kurahashi, Toshio; Tokitomo, Kazuo; and Ono, Toshihiko, 4,328,262, Cl. 427-93.000.
Ontario, Limited: *See*—
Wilson, Wilfred W., 4,327,826, Cl. 198-740.000.
Oppolzer, Wolfgang, to Givaudan Corporation. Process for making norpatchoulenol and novel intermediates useful therein. 4,328,352, Cl. 556-436.000.
ORDA Industries (1969) Ltd.: *See*—
Vennor, Philip, 4,327,919, Cl. 273-236.000.
Orion Industries, Inc.: *See*—
Fenstermaker, Michael, 4,327,809, Cl. 180-68.500.
O'Rourke, Thomas J.: *See*—
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,328,109, Cl. 252-8.600.
Orth, George O., Jr., to Puget Sound Salmon Egg Co. Slow-release nitrogen fertilizer employing waste proteinaceous animal food and method of making and use. 4,328,024, Cl. 71-15.000.
Ortner, Herbert; and Cechovsky, Werner, to J. M. Voith GmbH. Apparatus for reprocessing old paper. 4,328,095, Cl. 209-169.000.
Osaka, Yoshiaki: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, 4,328,337, Cl. 536-119.000.

Osipow, Lloyd I.; and Spitzer, J. George, to Restech Research Limited Partnership. Process for preparing propellant compositions forming foamed structures containing open and/or closed cells. 4,328,319, Cl. 521-78.000.

Ostertag, Werner; Bittler, Knut; and Bock, Gustav, to BASF Aktiengesellschaft. Preparation of metallic pigments having a metallic luster. 4,328,042, Cl. 106-308.00B.

Osuo, Hiroshi: *See—*
Mori, Akira; Noda, Sekijiro; Osuo, Hiroshi; Kanazawa, Akio; Nishimura, Tadahiko; Yamamoto, Masatoshi; and Tomatsu, Yoshio, 4,328,377, Cl. 568-798.000.

Ouki, Masami: *See—*
Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, 4,328,294, Cl. 429-193.000.
Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, 4,328,295, Cl. 429-193.000.
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Outboard Marine Corporation: *See—*
Brown, Peter W.; DuBois, Chester G.; Hartke, David J.; and Hunt, Paul R., 4,327,770, Cl. 137-614.050.

Owens-Corning Fiberglas Corporation: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,328,016, Cl. 65-2.000.

OY. Tampella AB: *See—*
Haikkala, Pekka O., 4,327,870, Cl. 241-34.000.

P.A. Rentrop Hubbert & Wagner: *See—*
Schottker, Willi, 4,327,570, Cl. 72-320.000.

Paddock, Stephen W.: *See—*
Clarke, Clarence C.; Paddock, Stephen W.; and Knoop, Donald E., 4,327,557, Cl. 62-153.000.

Pagani, Hermes: *See—*
Cavalleri, Bruno; Pagani, Hermes; and Volpe, Giancarlo, 4,328,316, Cl. 435-253.000.

Pagano, Richard R.: *See—*
Goldin, Jack; and Pagano, Richard R., 4,327,721, Cl. 128-207.150.

Pagel, Ernst-Olav: *See—*
Keitel, Rolf; Pagel, Ernst-Olav; and Drexler, Ludwig, 4,328,480, Cl. 340-60.000.

Pako, Corporation: *See—*
Fauchier, Jess F., II; and Anderson, Richard D., 4,327,878, Cl. 242-67.30R.

Palloch, Herbert; and Erndt, Hans, to Frankl & Kirchner GmbH & Co. KG, Fabrik fur Elektromotoren u. elektrische Apparate. Actuation apparatus for a control switch. 4,328,404, Cl. 200-153.0SC.

Pana-Plex Company, Inc.: *See—*
de Gunzburg, Melinda, 4,327,513, Cl. 40-572.000.

Panavision, Incorporated: *See—*
Gottschalk, Robert E., 4,327,562, Cl. 464-75.000.

Panek, Peter; Woditsch, Peter; Bayer, Eckhard; and Stutgens, Heribert, to Bayer Aktiengesellschaft. Process for the production of titanium dioxide pigments with high weather resistance. 4,328,040, Cl. 106-300.000.

Pappo, Raphael: *See—*
Collins, Paul W.; and Pappo, Raphael, 4,328,355, Cl. 560-53.000.

Paredes, Ernest Q. Illuminated safety garment. 4,328,533, Cl. 362-108.000.

Parma, Ludvik: *See—*
Docekal, Jiri; Parma, Ludvik; Pelant, Ivan; Sladky, Petr; and Zdravil, Josef, 4,327,587, Cl. 73-590.000.

Parsons, David: *See—*
Arrowsmith, David R.; and Parsons, David, 4,327,951, Cl. 308-184.00A.

Partes, Gunther, to Intertech Zeichengerate Genther Partes KG. Holder for lead insert and needle for a compass. 4,327,491, Cl. 33-27.00B.

Paruse, Siegfried: *See—*
Krappmann, Franz; Richter, Bernhard; and Paruse, Siegfried, 4,328,099, Cl. 210-232.000.

Pasko, Edward: *See—*
Colpack, Michael J.; Pasko, Edward; and Johnson, Richard W., 4,328,516, Cl. 358-113.000.

Passarotti, Carlo: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,328,240, Cl. 424-285.000.

Patel, Bhupendra P.; and Prusak, John J., to RCA Corporation. Record stamper protector. 4,327,830, Cl. 206-303.000.

Patel, Gordhanbhai N.; and Baughman, Ray H., to Allied Corporation. Process of printing by impact and for marking areas where impact or pressure is applied. 4,328,259, Cl. 427-44.000.

Patil, Ulhas S.; Honath, Harold F.; and Murphy, John C., to Pittsburgh-Des Moines Corporation. Spill condition venting system. 4,327,554, Cl. 62-45.000.

Pavan, Charles: *See—*
Jolly, Jean; Gigliotti, Giuseppe; Pavan, Charles; and Bulidon, Jacques, 4,328,173, Cl. 260-501.160.

Payne, Anthony R.: *See—*
Brown, Roger C.; Cairns, Hugh; and Payne, Anthony R., 4,328,230, Cl. 424-256.000.

Peachtree Doors, Inc.: *See—*
Governale, Bernard C., 4,327,535, Cl. 52-309.110.

Pearson, David D.; Lemkey, Frank D.; and Kear, Bernard H., to United Technologies Corporation. Heat treated single crystal articles and process. 4,328,045, Cl. 148-3.000.

Peck, Albert C. Apparatus and process for the beneficiation, washing, elutriation and cleaning of particulate solids and recovery of chemical values. 4,328,094, Cl. 209-160.000.

Peet, Norton P.: *See—*
Daniel, John K.; Matthews, Donald P.; and Peet, Norton P., 4,328,244, Cl. 424-304.000.

Pelant, Ivan: *See—*
Docekal, Jiri; Parma, Ludvik; Pelant, Ivan; Sladky, Petr; and Zdravil, Josef, 4,327,587, Cl. 73-590.000.

Pembroke, Richard W., to Telex Computer Products, Inc. Low inertial capstan dampener. 4,327,857, Cl. 226-190.000.

Pennwalt Corporation: *See—*
Kulischenko, Walter, 4,327,658, Cl. 114-146.000.
McKellin, Wilbur H.; Kolczynski, James R.; Mageli, Orville L.; and D'Angelo, Antonio J., 4,328,360, Cl. 560-129.000.
Robinson, Donald N., 4,328,151, Cl. 523-205.000.

Pennzoil Company: *See—*
Sardisco, John B.; and Drechsel, Erhart K., 4,328,196, Cl. 423-309.000.

Perini, Fabio. Winding device. 4,327,877, Cl. 242-66.000.

Perkin-Elmer Corporation, The: *See—*
Nester, James F., 4,328,298, Cl. 430-5.000.

Perks, Roger; and Dudley, Phillip J., to Northern Telecom Limited. Pushbutton switch assembly for telecommunications and other input. 4,328,399, Cl. 179-90.00K.

Permacel: *See—*
Korpman, Ralf, 4,328,269, Cl. 428-40.000.

Perrotta, Anthony J.: *See—*
Innes, Robert A.; and Perrotta, Anthony J., 4,328,157, Cl. 549-258.000.
Innes, Robert A.; and Perrotta, Anthony J., 4,328,158, Cl. 54-258.000.

Peterson, David M.: *See—*
Stern, Theodore G.; and Peterson, David M., 4,328,389, Cl. 136-246.000.

Petrov, Alexandr K.: *See—*
Markhasin, Alexandr B.; Belyaev, Gennady V.; Babushkin, Jury V.; and Petrov, Alexandr K., 4,328,559, Cl. 364-900.000.

Pettyjohn, William H.; Lewis, John T.; and Milligan, William E., deceased (by Milligan, Thelma K., administratrix), to Combustion Engineering, Inc. Apparatus for grinding the internal walls of pipes. 4,327,526, Cl. 51-245.000.

Petzold, Martin: *See—*
Bittner, Friedrich; Heimberger, Werner; Henkel, Kurt; Kriebitzsch, Norbert; Petzold, Martin; and Puschner, Kurt, 4,328,010, Cl. 55-51.000.

Pexton, Harold W.; and Smith, Robert A., to Magnetic Peripherals Inc. Gimbal spring retainer. 4,328,521, Cl. 360-104.000.

Pfeiffer, Heinrich: *See—*
Gries, Heinz; Pfeiffer, Heinrich; Speck, Ulrich; and Muetzel, Wolfgang, 4,328,202, Cl. 424-5.000.

Pfeiffer, Ullrich: *See—*
Birk, Michael; and Pfeiffer, Ullrich, 4,327,724, Cl. 128-218.00A.

Phillips Petroleum Company: *See—*
Capshew, Charles E., 4,328,121, Cl. 252-429.00B.
Cheng, Paul J.; and Mills, King L., 4,328,199, Cl. 423-450.000.
Likins, Merle R., Jr., 4,328,073, Cl. 203-2.000.
Moberly, Charles W., 4,328,132, Cl. 252-606.000.
Wu, Yulin, 4,328,372, Cl. 568-361.000.

Phillips, Robert G. Recreational device. 4,327,668, Cl. 119-29.000.

Piccardi, Paolo; Corda, Francesco; Gozzo, Franco; Menconi, Augusto; and Longoni, Angelo, to Montedison S.p.A. Pyrethroids. 4,328,237, Cl. 424-274.000.

Picker Corporation: *See—*
Morgan, Hugh T.; and Glatz, Walter, 4,328,418, Cl. 250-213.0VT.

Piesch, Steffen; and Wolf, Alfons, to Cassella Aktiengesellschaft. Melamine resins: process for their manufacture and the compression moulding compositions produced from the melamine resins. 4,328,326, Cl. 525-509.000.

Piesik, Edward T., to General Dynamics, Pomona Division. Tip off rate reducer. 4,327,624, Cl. 89-1.816.

Piller, Don W.: *See—*
Baldwin, Harry L.; Bergschneider, Beryl D.; Chamoff, Martin E.; Miller, Irving L.; Piller, Don W.; Robinett, Max J.; and Thorson, Donald L., 4,328,544, Cl. 364-405.000.

Pillsbury Company, The: *See—*
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Pioneer Electronic Corporation: *See—*
Shimada, Kunihiko; and Tsuchiya, Yukio, 4,328,400, Cl. 179-116.000.
Takaoka, Saburo; Higashi, Ryozi; and Hirano, Hiroyuki, 4,328,465, Cl. 330-151.000.

Pitman, F. Judson; and Chouinard, Richard J., to BRS, Inc. Wear tester for shoes. 4,327,572, Cl. 73-7.000.

Pitney Bowes Inc.: *See—*
Pryor, Roger W., 4,328,564, Cl. 365-130.000.
Thaler, Michael, 4,328,566, Cl. 365-222.000.

Pittsburg & Midway Coal Mining Co., The: *See—*
Anderson, Raymond P.; Schmalzer, David K.; and Wright, Charles H., 4,328,088, Cl. 208-8.0LE.

Pittsburgh-Des Moines Corporation: *See—*
Patil, Ulhas S.; Honath, Harold F.; and Murphy, John C., 4,327,554, Cl. 62-45.000.

Pittway Corporation: *See—*
Burnstein, Philip J.; and Seyler, Gerard, 4,328,486, Cl. 340-388.000.

Pivirotto, Thomas J.: *See—*
United States of America, National Aeronautics and Space Administration; and Pivirotto, Thomas J., 4,328,464, Cl. 330-4.300.
Plante, Robert, to L. S. Starrett Company, The. Vane airfoil method and apparatus. 4,327,495, Cl. 33-174.00C.
Plasma Physics Corp.: *See—*
Coleman, John H., 4,328,258, Cl. 427-39.000.
PLIVA Pharmaceutical and Chemical Works: *See—*
Kobrehel, Gabrijela; Radobolja, Gordana; Tamburasev, Zrinka; and Djokic, Slobodan, 4,328,334, Cl. 536-7.400.
Polaroid Corporation: *See—*
Baron, Richard C., 4,328,322, Cl. 521-163.000.
Polk, Albert S., Jr.: *See—*
Bell, Alfred J.; Polk, Albert S., Jr.; Cronvich, Lester; and Hardgrave, Everett J., Jr., 4,327,886, Cl. 244-3.290.
Pollet, Jean-Pierre, to Societe d'Etudes de Machines Thermiques S.E.M.T. Support device for the set of valve rockers of an internal combustion engine, particularly a large-size engine. 4,327,678, Cl. 123-90.400.
Pollmeier, Werner, to Nixdorf Computer AG. Switching arrangement to protect a component against overcurrent due to magnetic saturation of an inductor. 4,328,538, Cl. 363-56.000.
Polyakov, Jury P.: *See—*
Guselnikov, Leonid E.; Polyakov, Jury P.; Volnina, Elvira A.; and Nametkin, Nikolai S., 4,328,350, Cl. 556-406.000.
Pommer, Ernst-Heinrich: *See—*
Zech, Bernd; Theobald, Hans; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,328,236, Cl. 424-272.000.
Popendiker, Kurt: *See—*
Ulrich, Gebert; Thorwart, Werner; Komarek, Jaromir; Cartheuser, Carl; Popendiker, Kurt; and Greve, Heinz-Gunther, 4,328,227, Cl. 424-250.000.
Porat, Chaim, to Beta Engineering & Development Ltd. Force transducer. 4,327,593, Cl. 73-862.680.
Poston, Robert S., to Carmel Energy, Inc. Method for producing viscous hydrocarbons. 4,327,805, Cl. 166-272.000.
Potter, Bronson. Binary alarm. 4,328,485, Cl. 340-384.00E.
Potter, John K.: *See—*
Johnson, Richard S.; and Potter, John K., 4,328,114, Cl. 252-135.000.
Poutrait-Morin: *See—*
Le Bec, Dominique, 4,327,602, Cl. 74-594.600.
Powell, John A.: *See—*
Bachmann, Lothar; Powell, John A.; and Turner, Ralph W., 4,327,893, Cl. 251-159.000.
Powell, Lloyd E.: *See—*
Dickey, Joseph W.; Moore, Paul M.; and Powell, Lloyd E., 4,327,576, Cl. 73-40.50A.
Powell, Nelson B. Moisture indicator. 4,327,731, Cl. 128-287.000.
Power-Line Sales, Inc.: *See—*
Powers, Richard E., 4,327,858, Cl. 227-121.000.
Powers, Michael J.: *See—*
Sammells, Anthony F.; and Powers, Michael J., 4,328,287, Cl. 429-15.000.
Powers, Richard E., to Power-Line Sales, Inc. Non jamming head and magazine for fastener driving tool. 4,327,858, Cl. 227-121.000.
PPG Industries, Inc.: *See—*
Boberski, William G.; Nowakowski, Peter M.; and Seiner, Jerome A., 4,328,033, Cl. 106-74.000.
Hughes, David E., 4,328,020, Cl. 65-27.000.
Wehner, George O.; Schultz, Stephen J.; and Zito, Ronald R., 4,328,021, Cl. 65-27.000.
Welch, Cletus N.; Loehr, Clifford E.; Crawford, Roger A.; and Carbaugh, John E., 4,328,200, Cl. 423-474.000.
Prada, Luis E.: *See—*
Zumpini, Joseph J.; Buda, Paul R.; and Prada, Luis E., 4,327,556, Cl. 62-153.000.
Prahl, Jan; and Gelbenegger, Franz, to Ipos Gesellschaft fur integriert Prothesen-Entwicklung und orthopadietechnischen Service GmbH & Co., KG. Collecting bag for artificial intestinal outlets. 4,327,727, Cl. 128-283.000.
Prasad, Inaganti V.: *See—*
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Prentice, Robert C.; and Mastarone, Dale W., to Solargizer International, Inc. Continuous chemical conversion or fermentation apparatus. 4,328,317, Cl. 435-310.000.
Prentiss, William C.; and Prasad, Inaganti V., to Rohm and Haas Company. Chrome utilization in chrome tanning. 4,327,997, Cl. 8-94.260.
Price, Larry V.: *See—*
Scott, Douglas R.; and Price, Larry V., 4,327,762, Cl. 137-85.000.
Pries, Erich; and Thubeauville, Heinz, to Dr. C. Otto & Comp. G.m.b.H. Method to dry quench coke. 4,328,072, Cl. 201-1.000.
Printed Circuits International, Inc.: *See—*
Johns, William E.; and Locklin, David E., 4,328,264, Cl. 427-97.000.
Procon International Inc.: *See—*
Trager, John E., 4,328,177, Cl. 261-114.0JP.
Procter & Gamble Company, The: *See—*
King, Lawrence W., 4,327,729, Cl. 128-287.000.
McKibben, Gary E.; and Amneus, John S., 4,327,782, Cl. 141-26.000.
Proctor & Gamble Company, The: *See—*
Sorensen, Eugene R., 4,327,730, Cl. 128-287.000.
Progressive Machine Company, Inc.: *See—*
Bruno, Gerald R., 4,327,874, Cl. 242-46.200.
Prontor-Werk Alfred Gauthier GmbH: *See—*
Starp, Franz, 4,327,846, Cl. 222-382.000.
Propster, Mark A.: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,328,016, Cl. 65-2.000.
Proud, Joseph M.: *See—*
Fallier, Charles N., Jr.; and Proud, Joseph M., 4,328,446, Cl. 315-47.000.
Prusak, John J.: *See—*
Patel, Bhupendra P.; and Prusak, John J., 4,327,830, Cl. 206-303.000.
Pryor, Roger W., to Pitney Bowes Inc. Thermally secure postage meter system. 4,328,564, Cl. 365-130.000.
Ptaszek, George W.; and Romine, Robert B. Game apparatus utilizing a signalling means. 4,327,911, Cl. 273-1.0GE.
Ptaszkowska, Janina: *See—*
Witek, Stanislaw; Grobelny, Damian; Gorska-Poczopko, Jadwiga; Bakuniak, Edmund; Bakuniak, Irena; and Ptaszkowska, Janina, 4,328,226, Cl. 424-248.400.
Puget Sound Salmon Egg Co.: *See—*
Orth, George O., Jr., 4,328,024, Cl. 71-15.000.
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Mackay, Donald A. M.; and Puglia, Wayne J., 4,328,249, Cl. 426-3.000.
Purification Sciences Inc.: *See—*
Lowther, Frank E., 4,327,688, Cl. 123-435.000.
Puschner, Kurt: *See—*
Bittner, Friedrich; Heimberger, Werner; Henkel, Kurt; Kriebitzsch, Norbert; Petzold, Martin; and Puschner, Kurt, 4,328,010, Cl. 55-51.000.
Pyke, Thomas R.: *See—*
Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., 4,328,315, Cl. 435-253.000.
Quaint, Glenn W., to Goodyear Aerospace Corporation. Inflated shell structure for curing or embossing roller. 4,327,467, Cl. 29-113.00R.
Queen's University at Kingston: *See—*
Romero-Sierra, Cesar; and Webb, John C., 4,328,256, Cl. 427-4.000.
Quine, John P., to General Electric Company. Bandwidth compensated quarter-wave coupled power combiner. 4,328,471, Cl. 333-128.000.
R & G Sloane Manufacturing Co.: *See—*
Blumenkranz, James J.; and Hall, Rowland G., 4,327,895, Cl. 251-315.000.
R. W. Hartnett Company: *See—*
Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., 4,327,825, Cl. 198-380.000.
Raasch, Hans: *See—*
Derichs, Josef; and Raasch, Hans, 4,327,546, Cl. 57-263.000.
Rachel, Todd L., to Bendix Corporation, The. Combined warm-up enrichment, engine roughness and exhaust gas sensor control for EFI engine. 4,327,689, Cl. 123-436.000.
Racine Railroad Products, Inc.: *See—*
McIlrath, William P., 4,327,785, Cl. 144-133.00B.
Radobolja, Gordana: *See—*
Kobrehel, Gabrijela; Radobolja, Gordana; Tamburasev, Zrinka; and Djokic, Slobodan, 4,328,334, Cl. 536-7.400.
Raduner & Co. A.G.: *See—*
Lauchenauer, Alfred E., 4,328,058, Cl. 156-254.000.
Rafael, Aruth, to Deutsche Babcock Aktiengesellschaft. Apparatus for gasification of fine-grain coal. 4,328,007, Cl. 48-73.000.
Raff, Samuel J.: *See—*
Dickey, David C.; Korb, Barry R.; Baroff, James H.; and Raff, Samuel J., 4,327,500, Cl. 33-457.000.
Ragaly, Istvan: *See—*
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Ragen, Robert A.; and Herendeen, Carl E., to Xerox Corporation. Motion control apparatus. 4,328,452, Cl. 318-685.000.
Raif, Joshua, to Laser Industries, Ltd. Ophthalmoscopic instrument for measuring eye defects. 4,327,973, Cl. 351-9.000.
Rao, G. R. Mohan, to Texas Instruments Incorporated. High density read/write memory cell. 4,328,510, Cl. 357-41.000.
Raphael, Richard A.; Eyley, Stephen C.; and Coltman, Stephen C. W., to Fisons Limited. Process for preparing certain pyrano[3,2-g]quinoline 2,8-dicarboxylates and 4-oxo-quinoline-2-carboxylates. 4,328,341, Cl. 546-92.000.
Rapoport, Morris, to Du Pont de Nemours, E. I., and Company. Hydrocyanation of olefins. 4,328,172, Cl. 260-465.80R.
Raspanti, Giuseppe, to Apital Produzioni Industriall S.p.A. Process for the elimination of the residual fluorescence resulting from optical bleaching agents. 4,328,069, Cl. 162-162.000.
Rath, Robert E., to Metalwash Machinery Corp. Cleaning machine. 4,327,756, Cl. 134-72.000.
Rau, Gunther: *See—*
Scheiwe, Max W.; and Rau, Gunther, 4,327,799, Cl. 165-2.000.
Rauscher, Herbert E., to Corning Glass Works. Surface treatment of photothermally crystallizable, chemically-machinable glass-ceramic articles. 4,328,305, Cl. 430-351.000.
Raybestos-Manhattan, Inc.: *See—*
Singletary, Michael P.; and Fabian, James L., 4,328,140, Cl. 524-322.000.
RCA Corporation: *See—*
Avins, Jeremiah Y., 4,328,463, Cl. 328-133.000.
Curtis, Bernard J., 4,328,068, Cl. 156-626.000.
Elliott, Charles A., 4,328,575, Cl. 369-269.000.
Kressel, Henry; and Olsen, Gregory H., 4,328,508, Cl. 357-16.000.

Patel, Bhupendra P.; and Prusak, John J., 4,327,830, Cl. 206-303.000.

Reasons, Robert; and Albright, Bill E., to Boehringer Mannheim Corporation. Automated chemical testing apparatus. 4,328,185, Cl. 422-82.000.

Reba B.V.: *See—*
Bos, Wouter A., 4,327,506, Cl. 37-65.000.

Rebman, Jack, to Lord Corporation. Adjustable link-type insertion compliance device. 4,327,496, Cl. 33-180.00R.

Recognition Equipment Inc.: *See—*
Hayes, Larry J.; and Reddick, Keith L., 4,328,332, Cl. 528-296.000.

Red Devil Inc.: *See—*
Connolly, Peter, 4,327,488, Cl. 30-164.950.

Reddick, Keith L.: *See—*
Hayes, Larry J.; and Reddick, Keith L., 4,328,332, Cl. 528-296.000.

Redland Automation Limited: *See—*
Goddard, Christopher D. J., 4,327,586, Cl. 73-432.00R.

Redman, Charles M. Laser/amplifier/detector diode. 4,327,962, Cl. 350-96.150.

Reed, Leaman T., to Midway Fishing Tool Co. Geothermal well head assembly. 4,327,804, Cl. 166-97.000.

Reiff, Karl; Hofmann, Eberhard; and Guntert, Josef, to Robert Bosch GmbH. Control for operating mixture in internal combustion engines. 4,327,699, Cl. 123-568.000.

Reinhardt, William C.: *See—*
Cooper, James J., Jr.; Reinhardt, William C.; and Hornung, Elmer H., 4,327,957, Cl. 339-272.00R.

Reinking, Klaus: *See—*
Schmidt, Manfred; Freitag, Dieter; Bottenbruch, Ludwig; Reinking, Klaus; Rohr, Harry; and Medem, Harald, 4,328,174, Cl. 260-930.000.

Reinsma, Harold L.; and Clark, Ernest B., III, to Caterpillar Tractor Co. Pressure balanced - constant engagement force seal. 4,327,921, Cl. 277-3.000.

Reitberger, Peter H.: *See—*
Weber, Helmut; and Reitberger, Peter H., 4,328,504, Cl. 346-75.000.

Rekers, Louis J.: *See—*
Speca, Anthony N.; Katzen, Stanley J.; and Rekers, Louis J., 4,328,124, Cl. 252-430.000.

Remer, William R. Photocured tubular battery electrode and method of making same. 4,328,292, Cl. 429-140.000.

Rensselaer Polytechnic Institute: *See—*
Scarton, Henry A.; Kennedy, Warren C.; and Gaylo, Keith R., 4,327,817, Cl. 181-296.000.

Rentzea, Costin; Jung, Johann; Sauter, Hubert; Heilen, Gerd; and Zeeh, Bernd, to BASF Aktiengesellschaft. Plant growth regulators. 4,328,028, Cl. 71-76.000.

Repa Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,327,881, Cl. 242-107.200.

Reppisch-Werke AG: *See—*
Ubezio, Lorenzo, 4,327,499, Cl. 33-438.000.

Resch, Alois R., to Bunker Ramo Corporation. Apparatus for removing the insulation from electrical wires. 4,327,609, Cl. 81-9.510.

Research Foundation of City University of New York: *See—*
Ronn, Avigdor M.; Bernstein, Philip; Branch, Harvey C.; and Coffey, James P., 4,328,303, Cl. 430-290.000.

Resources Conservation Company: *See—*
Standiford, Ferris C., 4,328,074, Cl. 203-19.000.

Respitrace Corporation: *See—*
Watson, Herman L.; and Sackner, Marvin A., 4,327,741, Cl. 128-728.000.

Restech Research Limited Partnership: *See—*
Osipow, Lloyd I.; and Spitzer, J. George, 4,328,319, Cl. 521-78.000.

Rezniak, Waldemar B.; and Smirnowa, Larisa. Thermoplastic constructional-and-insulating material. 4,328,320, Cl. 521-84.000.

Reuter, Alfred, to Gebruder Linck, Maschinenfabrik und Eisengiesserei "Gatterlinck". Method and apparatus for the chipping dissection of tree logs into all-round machined lumber products. 4,327,789, Cl. 144-326.00R.

Rhodes, Sammy J.: *See—*
Bianchetta, Donald L.; and Rhodes, Sammy J., 4,327,549, Cl. 60-426.000.

Rhone-Poulenc Textile: *See—*
Juppet, Paul; and Konopatsky, Robert, 4,327,873, Cl. 242-45.000.

Ricardo Consulting Engineers Limited: *See—*
Crouch, Alan R.; and Lesley, Samuel, 4,327,679, Cl. 123-195.00R.

Ricci, Jean C., to Ducellier & Cie. Ignition advance correction device. 4,327,686, Cl. 123-408.000.

Richardson, Richard W., to Caterpillar Tractor Co. Torch height sensing apparatus. 4,328,049, Cl. 148-9.00R.

Richter, Bernhard: *See—*
Krappmann, Franz; Richter, Bernhard; and Paruse, Siegfried, 4,328,099, Cl. 210-232.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Szilagyi nee Farago, Katalin; Solyom, Sandor; Toldy, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,328,221, Cl. 424-241.000.
Zajer nee Balazs, Maria; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,328,231, Cl. 424-256.000.

Ricoh Company, Ltd.: *See—*
Jinnai, Koichiro, 4,328,505, Cl. 346-75.000.

Rilett, John W. Gas powered motors. 4,327,553, Cl. 60-673.000.

Rilett, John W.: *See—*
Saxby, Michael E.; and Rilett, John W., 4,327,520, Cl. 47-29.000.

Rink, Hans; Sieber, Peter; and Kamber, Bruno, to Ciba-Geigy Corporation. Cyclopeptides and pharmaceutical preparations thereof and also processes for their manufacture. 4,328,214, Cl. 424-177.000.

Riocci, Mario: *See—*
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Rix, Robert D., to AMP Incorporated. Pistol grip tool. 4,327,485, Cl. 29-751.000.

Rizkalla, Nabil, to Halcon SD Group, Inc., The. Conversion of acetic anhydride to ethylidene diacetate. 4,328,362, Cl. 560-263.000.

Robert Bosch GmbH: *See—*
Adler, Karl-Heinz; Fritz, Adolf; Brand, Gunter; and Kielbas, Eugen, 4,328,439, Cl. 310-70.00R.
Banzhaf, Werner, 4,327,683, Cl. 123-327.000.
Dilger, Peter; Honig, Gunter; and Kauff, Helmut, 4,328,526, Cl. 361-154.000.
Fehrenbach, Siegfried; Utz, Eberhard; and Herbst, Kurt, 4,327,767, Cl. 137-510.000.
Harsch, Klaus; and Schulzke, Peter, 4,327,692, Cl. 123-490.000.
Haubner, Georg; Meier, Werner; Wesemeyer, Jurgen; and Schrumpf, Hans, 4,327,687, Cl. 123-416.000.
Heyke, Klaus; Schmidt, Gunter; and Ragaly, Istvan, 4,328,512, Cl. 357-76.000.
Latsch, Reinhard; Schlembach, Hans; and Scherenberg, Dieter, 4,327,681, Cl. 123-260.000.
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Reiff, Karl; Hofmann, Eberhard; and Guntert, Josef, 4,327,699, Cl. 123-568.000.
Sauer, Rudolf; Hans, Waldemar; and Knapp, Heinrich, 4,327,690, Cl. 123-469.000.

Robertshaw Controls Company: *See—*
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Robertson, James R.: *See—*
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Robinett, Max J.: *See—*
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Robinette, Rose B. System for transferring images. 4,328,051, Cl. 156-62.000.

Robins, Roland K.; and Rousseau, Robert J., to ICN Pharmaceuticals, Inc. 9-(β-D-Ribofurandsyl)purine-6-carboxamide and related compounds. 4,328,336, Cl. 536-28.000.

Robinson, Donald N., to Pennwalt Corporation. Coated carbon fiber reinforced poly(vinylidene fluoride). 4,328,151, Cl. 523-205.000.

Robinson, George J., Jr. Game sling apparatus. 4,327,850, Cl. 224-103.000.

Rochman, Itzchak, to Olympic Aluminum Mfg., Ltd. Shutter assembly. 4,327,796, Cl. 160-101.000.

Rockwell International Corporation: *See—*
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,328,577, Cl. 370-84.000.
Denniston, James L., 4,327,784, Cl. 141-387.000.
Frankel, Milton B.; and Flanagan, Joseph E., 4,328,005, Cl. 44-57.000.
Harmon, James V.; and Kyllo, Roger A., 4,328,581, Cl. 371-8.000.
Smithson, Richard A., 4,328,588, Cl. 375-106.000.
Stodola, Kevin C., 4,328,583, Cl. 371-57.000.

Rodriquez, Paul R. Luminescent alphanumeric modular display. 4,327,511, Cl. 40-544.000.

Roeckel, Winfried; Scaccia, Carl; and Conti, John A., to Union Carbide Corporation. Apparatus for contacting a liquid with a gas. 4,328,175, Cl. 261-91.000.

Rogers, Mark A. M.: *See—*
Halsall, James R.; Larcombe, Michael H. E.; Robertson, James R.; and Rogers, Mark A. M., 4,328,545, Cl. 364-424.000.

Rogier, Edgar R., to Henkel Corporation. Alkylene oxide adducts of amino alcohols. 4,328,371, Cl. 564-506.000.

Rohm and Haas Company: *See—*
Prentiss, William C.; and Prasad, Inaganti V., 4,327,997, Cl. 8-94.260.

Rohr, Harry: *See—*
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Rolls-Royce Limited: *See—*
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Woodward, Clifford S., 4,327,548, Cl. 60-226.00A.

Romero-Sierra, Cesar; and Webb, John C., to Queen's University at Kingston. Preservation of green plant tissues. 4,328,256, Cl. 427-4.000.

Romine, Robert B.: *See—*
Ptaszek, George W.; and Romine, Robert B., 4,327,911, Cl. 273-1.0GE.

Ronn, Avigdor M.; Bernstein, Philip; Branch, Harvey C.; and Coffey, James P., to Research Foundation of City University of New York. Preparation of metal containing polymeric material via laser chemistry. 4,328,303, Cl. 430-290.000.

Rosdy, Bela: *See—*
Zajer nee Balazs, Maria; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,328,231, Cl. 424-256.000.

Rose, Paul F.: *See—*
Kuhn, William T., 4,327,876, Cl. 242-56.00A.

Rose, Thomas H.: *See—*
Kuhn, William T., 4,327,876, Cl. 242-56.00A.

Roselius, Wilhelm; Vitzthum, Otto; and Hubert, Peter, to Studiengesellschaft Kohle m.b.H. Method of extracting coffee oil containing aroma constituents from roasted coffee. 4,328,255, Cl. 426-417.000.

Rosenbaum, Walter S.: *See—*
Convis, Danny B.; Glickman, David; and Rosenbaum, Walter S., 4,328,561, Cl. 364-900.000.

Rosenfield, Richard E.; and Kochwa, Shaul, to Mt. Sinai School of Medicine of the City University of New York. Blood cell typing and compatibility test procedure. 4,328,183, Cl. 422-57.000.

Ross, Paul C. Hanging rack. 4,327,837, Cl. 211-87.000.

Rossetti, Alan E.: *See—*
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Rossi, Jean-Paul: *See—*
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Rossville Yarn Processing Company: *See—*
Hutcheson, William F., 4,327,464, Cl. 28-218.000.

Rothaar, Bruce C.: *See—*
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Rouaud, Christian: *See—*
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Rountree, Jean. Swagged tablecloth. 4,328,271, Cl. 428-66.000.

Rousseau, Robert J.: *See—*
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Martel, Jacques; Tessier, Jean; and DeMoute, Jean-Pierre, 4,328,167, Cl. 260-465.00F.
Vignau, Michel; and Heymes, Rene, 4,328,225, Cl. 424-246.000.

Rowley, Gerald L.; Leung, Danton; and Singh, Prithipal, to Syva Company. Enzyme-aminoglycoside conjugates. 4,328,311, Cl. 435-188.000.

Rudy, Manfred: *See—*
Miller, Rex B., Jr.; and Rudy, Manfred, 4,328,064, Cl. 156-558.000.

Rumianca S.p.A.: *See—*
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Ruof, Edgar J.: *See—*
Beck, Arnold A.; and Ruof, Edgar J., 4,327,948, Cl. 303-96.000.

Russell Hobbs Limited: *See—*
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Ruts, Josephus M.: *See—*
Van Den Plas, Roger J. Q.; Ruts, Josephus M.; and Driessen, Antonius J. G. C., 4,328,445, Cl. 315-46.000.

Ruyak, Robert F., to Autoclave Engineers, Inc. Normally magnetically actuated valve with novel nonmagnetic override. 4,327,892, Cl. 251-65.000.

Ryer, Jack; Brois, Stanley J.; and Nostrand, Elbert D., to Exxon Research & Engineering Co. Alcohol fuels of decreased corrosivity. 4,328,003, Cl. 44-53.000.

Sachleben, Harold G., Sr.; and Lees, Robert, to Allied Corporation. Yarn end retainer. 4,327,872, Cl. 242-18.00A.

Sackner, Marvin A.: *See—*
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Saint-Gobain Vitrage: *See—*
Colmon, Daniel; and Triffaux, Francis, 4,327,634, Cl. 100-155.00G.

Saito, Jun: *See—*
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Saito, Takashi: *See—*
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Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, 4,328,295, Cl. 429-193.000.
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Sakaguchi, Mitsuhito: *See—*
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Sakai, Yoshiharu: *See—*
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Sakamoto, Hajimu: *See—*
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Sakuranaka, Toru: *See—*
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Salisbury, Phillip J.: *See—*
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Sanyo Electric Co., Ltd.: *See—*
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Saraf, Dilip G.: *See—*
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Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; Yamamoto, Yasushi; and Ichinohe, Shoji, 4,328,216, Cl. 424-184.000.

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Scarton, Henry A.; Kennedy, Warren C.; and Gaylo, Keith R., to Rensselaer Polytechnic Institute. Method and apparatus for treating exhaust gases particularly for air-operated tools. 4,327,817, Cl. 181-296.000.

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Hertel, Otto; Scharf, Emil; and Melzer, Jaroslav, 4,328,142, Cl. 523-417.000.

Scharp, Glenn A., to United States of America, Navy. Continuous slot antennas. 4,328,502, Cl. 343-771.000.

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Vanhorebeek, Remi; Geyken, Erwin; Mayer, Peter; Schausberger, Helmut; and Brunner, Rudolf, 4,327,988, Cl. 354-320.000.

Schechter, Michael M., to Ford Motor Company. Unit fuel injector assembly with feedback control. 4,327,695, Cl. 123-504.000.

Scheiwe, Max W.; and Rau, Gunther, to Helmholtz-Institut fur Biomedizinische Technik. Process and apparatus for freezing living cells. 4,327,799, Cl. 165-2.000.

Scheld, H. William: *See*—
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Scheneman, Henry F., to Markson Manufacturing Company. Brackets for attachment to perforated panels. 4,327,888, Cl. 248-221.200.
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Schering, A.G.: *See*—
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Schering Corporation: *See*—
Ecker, Varda; Shah, Yogendra M.; and Chaudry, Imtiaz A., 4,328,213, Cl. 424-173.000.
Steinman, Martin; and Tahbaz, Pirouz, 4,328,345, Cl. 546-273.000.
Schirmer, Ulrich, to BASF Aktiengesellschaft. Penylcarbamic acid chlorides and their preparation. 4,328,165, Cl. 260-453.0RW.
Schlegel Corporation: *See*—
Yackiw, Charles, 4,328,273, Cl. 428-122.000.
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Schmelzer Corporation: *See*—
Detweiler, Charles A., 4,327,773, Cl. 137-625.660.
Schmidt, Detlef E., to Topper Manufacturing Corporation. Microform viewer. 4,327,974, Cl. 353-27.00R.
Schmidt, Dieter, to Hoffmann-La Roche Inc. Pharmaceutical compositions for parenteral or local administration. 4,328,222, Cl. 424-244.000.
Schmidt, Gunter: *See*—
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Thomas, Rudolf; Stetter, Jorg; Eue, Ludwig; and Schmidt, Robert R., 4,328,029, Cl. 71-92.000.
Schmidtner, Erich; and Kosorcic, Ratko, to Siemens Aktiengesellschaft. Circuit arrangement for limiting and regulating the collector current of the control element transistor of a switching network component. 4,328,537, Cl. 363-21.000.
Schmitt, Frederick L.: *See*—
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Schneider, Randy G.: *See*—
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Schoepe, Adolf. Refill hose mounting member and retainer for ball cocks. 4,327,941, Cl. 285-23.000.
Scholz, Hansjurgen; Brambilla, Luigi; Backhaus, Hans-Gerd; and Korber, Jurgen, to Daimler-Benz Aktiengesellschaft. Downwardly foldable covering for a gas cushion. 4,327,937, Cl. 280-732.000.
Schonfeld, Arnold, to Sperry Corporation. Duplex copying apparatus. 4,327,905, Cl. 271-3.100.
Schottker, Willi, to P.A. Rentrop Hubbert & Wagner. Apparatus for bending strip material into toothed shape. 4,327,570, Cl. 72-320.000.
Schreck, Ronald P.; Light, Kenneth K.; Hall, John B.; Schmitt, Frederick L.; Vock, Manfred H.; Schreiber, William L.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Alkyl esters of 1-alkanoyl cycloalkanols, process for preparing same and organoleptic uses thereof. 4,327,749, Cl. 131-276.000.
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Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,328,109, Cl. 252-8.600.
Schroeder, Elmer F. Engine cooling system. 4,327,673, Cl. 123-41.080.
Schroeder, Paul R., to Mostek Corporation. High density read only memory. 4,328,563, Cl. 365-104.000.
Schrumpf, Hans: *See*—
Haubner, Georg; Meier, Werner; Wesemeyer, Jurgen; and Schrumpf, Hans, 4,327,687, Cl. 123-416.000.
Schuenemann, Claus, to International Business Machines Corp. Method and arrangement for fast access to CCD-stores. 4,328,560, Cl. 364-900.000.
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Schwager, Frederic A., to Mattel, Inc. Steering mechanism for scale model vehicles. 4,327,517, Cl. 46-221.000.
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Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, to Xerox Corporation. High output power injection lasers. 4,328,469, Cl. 372-45.000.
SCM Corporation: *See*—
Woo, James T. K., 4,328,144, Cl. 523-408.000.
Scott, Douglas R.; and Price, Larry V., to Robertshaw Controls Company. Control device and method of making the same. 4,327,762, Cl. 137-85.000.
Scott & Fetzer Company, The: *See*—
Burgoon, Jack L., 4,327,455, Cl. 15-83.000.
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Seelig, Frederick A.; and Coman, William E., to Bendix Corporation, The. Apparatus and method for adjusting the torsional output of a flexible pivot. 4,327,527, Cl. 51-416.000.
Sefton, Francis. Hospital patient transfer unit. 4,327,453, Cl. 5-81.00R.
Seguin, Herb J. J., to Home Oil Company Limited. Method and apparatus for the protection of electrical equipment from high voltage transients. 4,328,523, Cl. 361-56.000.
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Haas, Peter; Muller, Heinz; Seifert, Peter; Wagner, Kuno; Findeisen, Kurt; and Konig, Klaus, 4,328,321, Cl. 521-108.000.
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Seino, Akio: *See*—
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Sekiguchi, Tomoyoshi, to Atsugi Motor Parts Co. Ltd. Air dehumidifying arrangement for pneumatic vehicle suspension system. 4,327,936, Cl. 280-711.000.
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, to Murata Manufacturing Co., Ltd. Method of forming copper conductor. 4,328,048, Cl. 148-6.310.
Seng, Stephen: *See*—
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Senn, Charles. Continuous, automatic mesh welding structure and method. 4,328,409, Cl. 219-56.000.
Senni, Paolo; Catoni, Mario; and Astarita, Domenico, to SNIA Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Process for the purification of raw caprolactam. 4,328,154, Cl. 260-239.30A.
Sequeira, Avilino, Jr., to Texaco Inc. Solvent extraction of hydrocarbon oils. 4,328,092, Cl. 208-326.000.
Sessions, J. Don. Gasoline pump display conversion kit. 4,327,940, Cl. 283-21.000.
Setter, Alfred C.; and Kesselring, Donald J., to Sperry Corporation. Magnetic compass compensation system. 4,327,498, Cl. 33-333.000.
Sewell Plastics, Inc.: *See*—
Alberghini, Alfred C.; and Donalson, Dennis C., 4,327,574, Cl. 73-19.000.
Sexton, William H. Visual cuing system and apparatus. 4,328,481, Cl. 340-74.000.
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Shanks, Ian A.; Clark, Michael G.; and Leslie, Frank M., to National Research Development Corporation. Liquid crystal color displays. 4,328,493, Cl. 340-784.000.
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Sharpton, Norman L. Auxiliary gasoline can holder for jeep vehicles. 4,327,849, Cl. 224-42.03A.
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Shimada, Kunihiko; and Tsuchiya, Yukio, to Pioneer Electronic Corporation. Coaxial multi-way planar diaphragm type loudspeaker system. 4,328,400, Cl. 179-116.000.
Shimazaki, Hiroshi: *See—*
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Shin-Etsu Chemical Co., Ltd.: *See—*
Kondow, Kiyohiro; Yoshida, Tetuo; and Tateyama, Yuki, 4,328,150, Cl. 523-400.000.
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Shindell, Herman A. Apparatus for the treatment of water. 4,328,084, Cl. 204-228.000.
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Siegfried, Robert W., to Corning Glass Works. Method and apparatus for making optical fiber waveguides. 4,328,018, Cl. 65-3.120.
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Kublick, Christian, 4,328,429, Cl. 307-58.000.
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Schmidtner, Erich; and Kosorcic, Ratko, 4,328,537, Cl. 363-21.000.
Siemers, Paul A.; and McKee, Douglas W., to General Electric Company. Method of coating a superalloy substrate, coating compositions, and composites obtained therefrom. 4,328,285, Cl. 428-633.000.
Signatron, Inc.: *See—*
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Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-7α-homo-PGI$_1$ compounds. 4,328,156, Cl. 549-396.000.
Sih, John C.: *See—*
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Silver Seiko Ltd.: *See—*
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Simon, Avi, to Beta Engineering & Development Ltd. Multi-axes positioning system. 4,327,596, Cl. 74-89.200.
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Simons, Donald M., to Du Pont de Nemours, E. I., and Company. Flame retardant filled polypropylene compositions containing carbon black and a cured intumescent flame retardant (IFR). 4,328,139, Cl. 252-606.000.
Simonson, Kent L.: *See—*
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Simonson, Lloyd G.; and Lamberts, Burton L., to United States of America, Navy. Method of producing a plaque dispersing enzyme. 4,328,313, Cl. 435-200.000.
Singer Company, The: *See—*
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Singh, Prithipal: *See—*
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Singletary, Michael P.; and Fabian, James L., to Raybestos-Manhattan, Inc. Fluoroelastomer processing aid. 4,328,140, Cl. 524-322.000.
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Sitzler, Fred C., to Du Pont de Nemours, E. I., and Company. Low insertion force dual beam pin terminal and connector. 4,327,956, Cl. 339-107.000.
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SKF Kugellagerfabriken GmbH: *See—*
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Slagel, Gary A.; and Bonfield, Peter L., to Texas Instruments Incorporated. Interchangeable module for integrated circuits. 4,327,953, Cl. 339-17.0CF.
Slinkard, William E.; and Baylis, Anthony B., to Celanese Corporation. Hydrocarbon oxidation via carbon monoxide reduced catalyst. 4,328,365, Cl. 562-512.200.
Slivinsky, Sandra H.; and Ogle, Norman E. Laser skiving system. 4,328,410, Cl. 219-121.0LJ.
Sloan Valve Company: *See—*
Allen, Charles S.; Allen, Charles C.; and Lissau, Frederic, 4,327,891, Cl. 251-38.000.
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Smith, David K.; Harlow, Nigel; Maxfield, Samuel W.; and Mitchell, James, to Henry Balfour & Co. Lautering apparatus. 4,327,631, Cl. 99-277.200.
Smith, Harry D.: *See—*
Swartz, Harold L.; Smith, Harry D.; and Grimes, Terrence L., 4,328,483, Cl. 340-347.0SY.
Smith Kline Corporation: *See—*
Brenner, L. Martin, 4,328,153, Cl. 260-239.0BB.
Smith, Louise W. Apparatus for the self-collection of cervical cell specimens. 4,327,744, Cl. 128-759.000.
Smith, Richard A., to Midland-Ross Corporation. Aircraft instrument lighting fixture. 4,328,532, Cl. 362-19.000.
Smith, Robert A.: *See—*
Pexton, Harold W.; and Smith, Robert A., 4,328,521, Cl. 360-104.000.
Smith, Roger R., to United States of America, Army. Cable guide for powered winch. 4,327,897, Cl. 254-395.000.
Smithson, Richard A., to Rockwell International Corporation. Synchronization system for digital data. 4,328,588, Cl. 375-106.000.
Smits, Jacobus J. G.: *See—*
Kock, Theodorus J. J. M.; and Smits, Jacobus J. G., 4,328,324, Cl. 525-423.000.
Snamprogetti, S.p.A.: *See—*
Mazzei, Marcello; Riocci, Mario; and Marconi, Walter, 4,328,364, Cl. 562-401.000.
SNIA Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Senni, Paolo; Catoni, Mario; and Astarita, Domenico, 4,328,154, Cl. 260-239.30A.

Snooks, Gregory L., to Sherwood Medical Industries Inc. Method of making a cuffed tube. 4,328,056, Cl. 156-242.000.
Sobata, Tamotsu: *See*—
Izumi, Minao; Sobata, Tamotsu; Ishikura, Shinichi; and Ishii, Keizou, 4,328,143, Cl. 523-412.000.
Societe d'Etudes de Machines Thermiques S.E.M.T.: *See*—
Pollet, Jean-Pierre, 4,327,678, Cl. 123-90.400.
Societe Europeenne de Propulsion: *See*—
Maistre, Michel, 4,328,272, Cl. 428-105.000.
Societe Industrielle Lesaffre: *See*—
Clement, Philippe; and Rossi, Jean-Paul, 4,328,250, Cl. 426-18.000.
Societe Vetrotex Saint-Gobain: *See*—
Melan, Giuseppe; Verdet, Pierre; and Besenval, Christian, 4,328,015, Cl. 65-2.000.
Soffa, Mark B.: *See*—
Kirshenboin, Zeev; and Soffa, Mark B., 4,327,860, Cl. 228-179.000.
Soga, Mitsurou: *See*—
Watanabe, Toshihiko; Takenouchi, Naoki; Soga, Mitsurou; and Kawakami, Kouji, 4,328,412, Cl. 219-125.100.
Sogo, Yoshitaka: *See*—
Yoneda, Tetsuzo; Sogo, Yoshitaka; Fukushima, Masami; and Miyagawa, Shinichi, 4,327,598, Cl. 74-467.000.
Solarex Corporation: *See*—
Whitehouse, Daniel L., 4,328,260, Cl. 427-75.000.
Solargizer International, Inc.: *See*—
Prentice, Robert C.; and Mastarone, Dale W., 4,328,317, Cl. 435-310.000.
Solyom, Sandor: *See*—
Szilagyi nee Farago, Katalin; Solyom, Sandor; Toldy, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,328,221, Cl. 424-241.000.
Somerville, Francis S., to Northern Border Pipeline Company. Method of applying a crack arrestor. 4,327,473, Cl. 29-447.000.
Sone, Masazumi: *See*—
Imai, Iwao; and Sone, Masazumi, 4,327,702, Cl. 123-620.000.
Sony Corporation: *See*—
Yamazaki, Hiroshi, 4,328,432, Cl. 307-221.00D.
Sorensen, Eugene R., to Proctor & Gamble Company, The. Textured thermoplastic film and product manufactured therefrom. 4,327,730, Cl. 128-287.000.
Soto, Jose M. Torque converter. 4,327,597, Cl. 74-415.000.
Sotomura, Mikio; Iwamoto, Seiichi; Sawada, Teruo; Inoue, Shintaro; Suzuki, Akira; and Ikeda, Yoshiaki, to Kanebo Ltd. Method for the treatment of cells of *Streptococcus pyogenes*. 4,328,218, Cl. 424-195.000.
Soundstream, Inc.: *See*—
Stockham, Thomas G., Jr.; and Rothaar, Bruce C., 4,328,580, Cl. 371-8.000.
Southwest Microwave, Inc.: *See*—
Cheal, James, 4,328,487, Cl. 340-554.000.
Spann, Donald C. Disposable orthopedic support. 4,327,714, Cl. 128-80.00A.
Speca, Anthony N.; Katzen, Stanley J.; and Rekers, Louis J., to National Petro Chemicals Corp. Olefin polymerization catalyst and process. 4,328,124, Cl. 252-430.000.
Speck, Ulrich: *See*—
Gries, Heinz; Pfeiffer, Heinrich; Speck, Ulrich; and Muetzel, Wolfgang, 4,328,202, Cl. 424-5.000.
Spector, George: *See*—
Tepsa, Brian; and Spector, George, 4,327,818, Cl. 182-238.000.
Spence, Bertle, to Water Front Products, Inc,. Water-powered brush with gear drive. 4,327,454, Cl. 15-29.000.
Spence, Kemet D.; and Andrews, Robert E., to Battelle Development Corporation. Microbial insecticide. 4,328,203, Cl. 424-16.000.
Sperry Corporation: *See*—
Krawczak, John A.; and Torok, Ernest J., 4,328,468, Cl. 372-97.000.
McDuffie, James W.; and Knepper, Larimer J., 4,327,544, Cl. 56-10.200.
Schonfeld, Arnold, 4,327,905, Cl. 271-3.100.
Setter, Alfred C.; and Kesselring, Donald J., 4,327,498, Cl. 33-333.000.
Swartz, Harold L.; Smith, Harry D.; and Grimes, Terrence L., 4,328,483, Cl. 340-347.0SY.
Van Ginhoven, Robert M., 4,327,542, Cl. 56-98.000.
Spethmann, Donald H., to Honeywell Inc. Transport and chiller energy minimization for air conditioning systems. 4,327,559, Cl. 62-179.000.
Spitzer, J. George: *See*—
Osipow, Lloyd I.; and Spitzer, J. George, 4,328,319, Cl. 521-78.000.
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, to International Flavors & Fragrances Inc. Bridged ketones, process for preparing same and use thereof in augmenting or enhancing fabric softeners. 4,328,109, Cl. 252-8.600.
Sprecker, Mark A., to International Flavors & Fragrances Inc. Method of attracting and destroying tobacco beetles with alkyl phenethylethers. 4,328,206, Cl. 424-84.000.
SRO Kugellagerwerke J. Schmid-Roost AG: *See*—
Borel, Denis, 4,327,949, Cl. 308-6.00C.
Stafford, Michael J., to Lucas Industries Limited. Commutator. 4,328,440, Cl. 310-233.000.
Stahan Corporation: *See*—
Stancil, Charles M., 4,327,644, Cl. 102-504.000.
STAHL GmbH & Co.: *See*—
Frohlich, Eckhard; and Mattka, Gunter, 4,327,906, Cl. 271-103.000.
Stamicarbon, B.V.: *See*—
van de Moesdijk, Cornelis G. M., 4,328,198, Cl. 423-371.000.
Stancil, Charles M., to Stahan Corporation. Projectile deployed cable weapons system. 4,327,644, Cl. 102-504.000.
Standard Oil Company: *See*—
Fitzgibbons, William O.; and Barko, Andrew J., 4,328,075, Cl. 203-37.000.
Standard Oil Company (Indiana): *See*—
Udovich, Carl A., 4,328,120, Cl. 252-435.000.
Udovich, Carl A.; and Bertolacini, Ralph J., 4,328,126, Cl. 252-435.000.
Watson, Roger W.; and Strukl, Joseph S., 4,328,111, Cl. 252-33.400.
Weisrock, William P., 4,328,308, Cl. 435-104.000.
Weisrock, William P., 4,328,310, Cl. 435-104.000.
Standiford, Ferris C., to Resources Conservation Company. Production of concentrated alcohol and distillery slop. 4,328,074, Cl. 203-19.000.
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., to Gulf Research & Development Company. Hydrotreating catalyst and manufacture thereof. 4,328,128, Cl. 252-441.000.
Starp, Franz, to Prontor-Werk Alfred Gauthier GmbH. Apparatus for supplying cooling and/or polishing liquids, more especially for use in machines for grinding and/or polishing optical lenses. 4,327,846, Cl. 222-382.000.
Starp, Franz. Frictionally controlled photographic camera apparatus such as a reflex camera. 4,327,977, Cl. 354-29.000.
Stauffer Chemical Company: *See*—
Buren, Lawrence L.; and Large, George B., 4,328,027, Cl. 71-86.000.
Stayton Canning Company Cooperative: *See*—
Klukis, Edward L., 4,327,616, Cl. 83-409.200.
Steelcase Inc.: *See*—
Wisniewski, Joseph M., 4,327,461, Cl. 16-42.00R.
Steiner, Peter; Gutterman, Carl; and Dalton, Stuart M., to Electric Power Research Institute, Inc. Reduction of sulfur dioxide with recycled coal. 4,328,201, Cl. 423-569.000.
Steinman, Martin; and Tahbaz, Pirouz, to Schering Corporation. Pyridyl substituted indoles. 4,328,345, Cl. 546-273.000.
Stephenson, Robert L.: *See*—
Frankila, John W.; and Stephenson, Robert L., 4,327,882, Cl. 242-107.40A.
Stern, Ronald C.: *See*—
Heinecke, Rudolf A. H.; and Stern, Ronald C., 4,328,261, Cl. 427-91.000.
Stern, Theodore G.; and Peterson, David M., to General Dynamics Corporation. Inherent spectrum-splitting photovoltaic concentrator system. 4,328,389, Cl. 136-246.000.
Sterner, Russell L., to Kidde, Inc. Crane boom extending, retracting and cooperative latching arrangement. 4,327,533, Cl. 52-115.000.
Stetter, Jorg: *See*—
Thomas, Rudolf; Stetter, Jorg; Eue, Ludwig; and Schmidt, Robert R., 4,328,029, Cl. 71-92.000.
Steutermann, Edward M. Solar heat recovery control. 4,327,705, Cl. 126-422.000.
Stevens, John: *See*—
Huizinga, John S.; and Stevens, John, 4,328,280, Cl. 428-411.000.
Stevens, Larry G. H.; Sweet, Edmund G. F.; and Vresk, Franklin V., to MIC Manufacturing and Machine Works Ltd. Fastener driving device with multiple bits. 4,327,790, Cl. 145-62.000.
Stewart, Ross E., to Gould Inc. Bar pin for use in torque rods. 4,327,995, Cl. 403-224.000.
Stockham, Thomas G., Jr.; and Rothaar, Bruce C., to Soundstream, Inc. Apparatus and an improved method for processing of digital information. 4,328,580, Cl. 371-8.000.
Stodola, Kevin C., to Rockwell International Corporation. Data bus fault detector. 4,328,583, Cl. 371-57.000.
Stoepel, Kurt: *See*—
Kabbe, Hans-Joachim; Mayer, Hildegard E.; Mayer, Annedore; Ziemann, Heinz; and Stoepel, Kurt, 4,328,223, Cl. 424-246.000.
Stoffel, James C., to Xerox Corporation. Filter for image pixels. 4,328,425, Cl. 250-578.000.
Stovall, Robert E. Statistical calibration system. 4,328,552, Cl. 364-554.000.
Strader, Don S., to Motor Wheel Corporation. Safety tire and wheel assembly. 4,327,791, Cl. 152-158.000.
Streifer, William: *See*—
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,328,469, Cl. 372-45.000.
Strojny, Edwin J., to Dow Chemical Company, The. Method of preparing aldehydes. 4,328,373, Cl. 568-435.000.
Strojny, Werner, to August Ruggeberg, Firma. Manual sharpener for teeth of chain saws. 4,327,605, Cl. 76-25.00A.
Strukl, Joseph S.: *See*—
Watson, Roger W.; and Strukl, Joseph S., 4,328,111, Cl. 252-33.400.
Stuart, Kenneth L.: *See*—
Chalmers, William T.; Kutney, James P.; Salisbury, Phillip J.; Stuart, Kenneth L.; Townsley, Phillip M.; and Worth, Brian R., 4,328,309, Cl. 435-126.000.
Stuckey, A. Nelson, Jr.; and Shutt, John R., to Exxon Research & Engineering Co. Process for production of hydrogenated hydrocarbon polymers and catalyst useful therefore. 4,328,090, Cl. 208-44.000.
Studiengesellschaft Kohle m.b.H.: *See*—
Roselius, Wilhelm; Vitzthum, Otto; and Hubert, Peter, 4,328,255, Cl. 426-417.000.
Stutgens, Heribert: *See*—
Panek, Peter; Woditsch, Peter; Bayer, Eckhard; and Stutgens, Heribert, 4,328,040, Cl. 106-300.000.

Su, Sophia R.; and Natansohn, Samuel, to GTE Laboratories Incorporated. Process for the recovery of molybdenum from spent catalysts. 4,328,191, Cl. 423-54.000.
Sublett, Bobby J., to Eastman Kodak Company. Copolyester adhesives. 4,328,278, Cl. 428-246.000.
Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co.: *See—*
Muellejans, Herbert; and Koetz, Hans-Joachim, 4,327,803, Cl. 165-166.000.
Suganuma, Akihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering linkage for vehicles. 4,327,926, Cl. 280-95.00R.
Sugawara, Hideo; Miyazaki, Yukio; and Seino, Akio, to Kaken Chemical Co., Ltd. Antibiotic Actinomadura-L-31 A, B. 4,328,211, Cl. 424-117.000.
Sugawara, Norio: *See—*
Nawa, Motoyuki; Sugawara, Norio; and Takahashi, Yutaka, 4,327,869, Cl. 239-590.500.
Sugawara, Tsunenori: *See—*
Suzuki, Gyoichi; Shimotsuma, Teruo; Higuchi, Masaaki; Sugawara, Tsunenori; and Yano, Takeshi, 4,327,899, Cl. 266-193.000.
Sugimoto, Kaname, to Hayashibara, Ken. Process for preparing mouse interferon. 4,328,207, Cl. 424-85.000.
Sugiyama, Iwakichi: *See—*
Okawara, Makoto; Takaoka, Yukihisa; Kameyama, Makoto; and Sugiyama, Iwakichi, 4,328,170, Cl. 260-465.400.
Sugiyama, Masahiko: *See—*
Nakayama, Haruhiko; Uchida, Kiyoshi; Sugiyama, Masahiko; and Konishi, Hiromu, 4,327,820, Cl. 188-370.000.
Sumitomo Chemical Company, Limited: *See—*
Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, 4,328,166, Cl. 260-453.0AR.
Mukaiyama, Teruaki; and Sakito, Yoji, 4,328,378, Cl. 568-857.000.
Sumitomo Metal Industries, Ltd.: *See—*
Tozaki, Yasuyuki; Ueda, Minoru; Hirata, Takeyuki; and Anezaki, Syoji, 4,328,030, Cl. 75-60.000.
Sumrall, Reese: *See—*
Holden, Homer N.; and Sumrall, Reese, 4,327,474, Cl. 29-149.5NM.
Sun Electric Corporation: *See—*
Kreft, Keith A.; Rossetti, Alan E.; Lynn, Michael F.; and Wagoner, Jesse W., 4,328,546, Cl. 364-424.000.
Superpressure, Inc.: *See—*
Biederman, Richard; and Zurawski, Ronald A., 4,327,764, Cl. 137-192.000.
Surface Technology, Inc.: *See—*
Feldstein, Nathan, 4,328,266, Cl. 427-305.000.
Suzuki, Akira: *See—*
Sotomura, Mikio; Iwamoto, Seiichi; Sawada, Teruo; Inoue, Shintaro; Suzuki, Akira; and Ikeda, Yoshiaki, 4,328,218, Cl. 424-195.000.
Suzuki, Gyoichi; Shimotsuma, Teruo; Higuchi, Masaaki; Sugawara, Tsunenori; and Yano, Takeshi, to Nippon Kokan Kabushiki Kaisha. Stave cooling device having unwelded double tube. 4,327,899, Cl. 266-193.000.
Suzuki, Kouji; and Takata, Takanori, to Bridgestone Tire Company Limited. Method of and apparatus for inspecting pneumatic tire. 4,327,580, Cl. 73-146.000.
Suzuki, Masatoshi: *See—*
Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, 4,328,294, Cl. 429-193.000.
Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, 4,328,295, Cl. 429-193.000.
Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, 4,328,296, Cl. 429-193.000.
Suzuki, Masayuki: *See—*
Yamamichi, Masayoshi; Suzuki, Masayuki; Murakami, Hiroyasu; and Ito, Tadashi, 4,327,982, Cl. 354-156.000.
Suzuki, Mituo: *See—*
Matsuoka, Shigeru; Tsubaki, Toshio; Tokunaga, Takeshi; Yonekura, Seiji; Nakamura, Kenji; and Suzuki, Mituo, 4,328,540, Cl. 364-167.000.
Suzuki, Ryoichi; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Camera with solar batteries connected in series or parallel. 4,328,456, Cl. 320-7.000.
Suzuki, Sadahide: *See—*
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,327,812, Cl. 180-226.000.
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,327,930, Cl. 280-284.000.
Suzuki, Soichi: *See—*
Usuba, Takahiro; Iinuma, Kazuhiro; Suzuki, Soichi; and Abe, Yukito, 4,328,490, Cl. 340-715.000.
Swanson, William C., to International Harvester Company. Header height control for a cotton harvester. 4,327,540, Cl. 56-11.900.
Swarovski, Daniel, to D. Swarvoski & Co., Glasschleiferei. Glass mirror mat construction and methods for forming and using the same. 4,328,276, Cl. 428-213.000.
Swartz, Harold L.; Smith, Harry D.; and Grimes, Terrence L., to Sperry Corporation. Multiplexed-demultiplexed synchro demodulation apparatus. 4,328,483, Cl. 340-347.0SY.
Swatzell, Lillian. Neck cushioning pad. 4,327,452, Cl. 4-523.000.
Sweet, Edmund G. F.: *See—*
Stevens, Larry G. H.; Sweet, Edmund G. F.; and Vresk, Franklin V., 4,327,790, Cl. 145-62.000.
Swiss Aluminium Ltd.: *See—*
Friedli, Hans; Gut, Edwin; and Aeschbach, Peter, 4,328,085, Cl. 204-245.000.
Swogger, Kurt W.: *See—*
Burk, George A.; Witt, Brian G.; Swogger, Kurt W.; and Wilson, Charles A., 4,328,171, Cl. 260-465.400.
Sybron Corporation: *See—*
Mancini, Gerold A.; and Dormer, George J., 4,328,032, Cl. 75-124.000.
Synergo, Inc.: *See—*
Wright, Frank C., 4,328,107, Cl. 210-703.000.
Syntex (U.S.A.) Inc.: *See—*
Yu, Cheng-Der; and Bruenner, Ursula, 4,328,245, Cl. 424-305.000.
Syva Company: *See—*
Rowley, Gerald L.; Leung, Danton; and Singh, Prithipal, 4,328,311, Cl. 435-188.000.
Szilagyi nee Farago, Katalin; Solyom, Sandor; Toldy, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, to Richter Gedeon Vegyeszeti Gyar Rt. Substituted steroid-spiro-oxazolidinone derivatives and a process for the preparation thereof. 4,328,221, Cl. 424-241.000.
Szondy, Eleonora: *See—*
Szilagyi nee Farago, Katalin; Solyom, Sandor; Toldy, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,328,221, Cl. 424-241.000.
Szporny, Laszlo: *See—*
Zajer nee Balazs, Maria; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,328,231, Cl. 424-256.000.
Szpur, Roman. Medical electrode assembly. 4,327,737, Cl. 128-640.000.
Szymborski, Joseph; and Unetic, Frank D., to Gould Inc. Battery vent plug. 4,328,290, Cl. 429-54.000.
T. A. Jennings Associates, Inc.: *See—*
Jennings, Thomas A., 4,327,573, Cl. 374-10.000.
Tabacek, Joseph A.: *See—*
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,328,128, Cl. 252-441.000.
Tabata, Itsuo; Watanabe, Seiichi; and Shinoyama, Masayuki, to Denki Kaguku Kogyo Kabushiki Kaisha. Isomerization of dichlorobutenes. 4,328,381, Cl. 570-236.000.
Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Desensitizing solution for lithographic printing plate. 4,328,304, Cl. 430-331.000.
Tago, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic printing apparatus. 4,327,990, Cl. 355-3.00R.
Tahbaz, Pirouz: *See—*
Steinman, Martin; and Tahbaz, Pirouz, 4,328,345, Cl. 546-273.000.
Taiho Pharmaceutical Company Limited: *See—*
Fujii, Setsuro; Unemi, Norio; and Takeda, Setsuo, 4,328,229, Cl. 424-251.000.
Takagi, Takeji, to Olympus Optical Co., Ltd. Flexible tube for an endoscope. 4,327,711, Cl. 128-4.000.
Takahashi, Seigo, to Mitutoyo Mfg. Co., Ltd. Linear gauge. 4,327,494, Cl. 33-172.00E.
Takahashi, Toshio: *See—*
Ogata, Masaru; Tawara, Katsuya; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Takahashi, Toshio, 4,328,348, Cl. 548-335.000.
Takahashi, Yohonosuke: *See—*
Tachikawa, Hiromichi; Takahashi, Yohonosuke; Ishii, Kazuo; Ikeda, Tomoaki; and Shinozaki, Fumiaki, 4,328,304, Cl. 430-331.000.
Takahashi, Yutaka: *See—*
Nawa, Motoyuki; Sugawara, Norio; and Takahashi, Yutaka, 4,327,869, Cl. 239-590.500.
Takami, Akio; Saito, Tsutomu; and Tanaka, Kazutoshi, to NGK Spark Plug Co., Ltd. Gas detecting element and process for producing the same. 4,328,477, Cl. 338-34.000.
Takano, Takashi: *See—*
Kawata, Singo; and Takano, Takashi, 4,328,518, Cl. 360-10.000.
Takaoka, Saburo; Higashi, Ryozi; and Hirano, Hiroyuki, to Pioneer Electronic Corporation. Tone control circuit utilizing variable gain amplifier. 4,328,465, Cl. 330-151.000.
Takaoka, Yukihisa: *See—*
Okawara, Makoto; Takaoka, Yukihisa; Kameyama, Makoto; and Sugiyama, Iwakichi, 4,328,170, Cl. 260-465.400.
Takata, Akira: *See—*
Akutagawa, Kenichi; Yoshida, Hitoshi; Hattori, Tadashi; Takata, Akira; and Fukuda, Tamotsu, 4,327,685, Cl. 123-402.000.
Takata, Takanori: *See—*
Suzuki, Kouji; and Takata, Takanori, 4,327,580, Cl. 73-146.000.
Takeda Chemical Industries, Ltd.: *See—*
Nagase, Hiroshi, 4,328,367, Cl. 564-155.000.
Takeda, Keiso, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection type internal combustion engine. 4,327,675, Cl. 123-52.00M.
Takeda, Setsuo: *See—*
Fujii, Setsuro; Unemi, Norio; and Takeda, Setsuo, 4,328,229, Cl. 424-251.000.
Takei, Hirofumi, to Nissan Motor Co., Ltd. Apparatus for cooling a vehicle engine room. 4,327,674, Cl. 123-41.120.
Takemoto, Ichiki: *See—*
Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, 4,328,166, Cl. 260-453.0AR.
Takenaka, Hiroyasu; and Torikai, Eiichi, to Agency of Industrial Science & Technology. Method for the manufacture of ion-exchange membrane-catalytic metal composite. 4,328,086, Cl. 204-296.000.

Takenouchi, Naoki: *See—*
Watanabe, Toshihiko; Takenouchi, Naoki; Soga, Mitsurou; and Kawakami, Kouji, 4,328,412, Cl. 219-125.100.

Takeuchi, Osamu; Chiba, Satoshi; Komiya, Satoru; Komatsu, Satoshi; Asada, Kazuo; Tokashiki, Yuji; and Shimazaki, Hiroshi, to Xerox Corporation. Transfer paper stripper. 4,327,991, Cl. 355-3.0SH.

Takeuchi Press Industries Co., Ltd.: *See—*
Fujimori, Hikoichiro, 4,327,637, Cl. 101-40.000.

Takeuchi, Tetsuo: *See—*
Abe, Masao; Kawahara, Haruo; Kogure, Yoichiro; Maeohmichi, Masahiro; Takeuchi, Tetsuo; and Karashima, Norihiko, 4,328,556, Cl. 364-900.000.

Taki, Yasuo: *See—*
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,327,482, Cl. 29-740.000.

Tally, David N., to Gates Rubber Company, The. Formable hose with a reformable insert. 4,327,775, Cl. 138-103.000.

Talon, Inc.: *See—*
Lawrence, Charles T., 4,327,470, Cl. 29-408.000.

Tamburasev, Zrinka: *See—*
Kobrehel, Gabrijela; Radobolja, Gordana; Tamburasev, Zrinka; and Djokic, Slobodan, 4,328,334, Cl. 536-7.400.

Tamiya, Katsunori: *See—*
Kimoto, Yasuo; Tamiya, Katsunori; Honda, Shoichi; Maehata, Hidehiko; and Kamada, Hiroshi, 4,328,083, Cl. 204-217.000.

Tanaka, Atsushi; Chiba, Toshiyuki; and Miyata, Hirotaka, to Daicel Chemical Industries, Ltd. Continuous bulk polymerization process for preparing copolymer of aromatic vinyl monomer and maleic anhydride. 4,328,327, Cl. 526-66.000.

Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, to Nippondenso Co., Ltd. Solid electrolyte for use in oxygen concentration sensor. 4,328,294, Cl. 429-193.000.

Tanaka, Katsuhiko; Saito, Toshitaka; Suzuki, Masatoshi; and Ouki, Masami, to Nippondenso Co., Ltd. Solid electrolyte for use in oxygen concentration sensor. 4,328,295, Cl. 429-193.000.

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Tanaka, Kazutoshi: *See—*
Takami, Akio; Saito, Tsutomu; and Tanaka, Kazutoshi, 4,328,477, Cl. 338-34.000.

Tanaka, Souhei: *See—*
Araki, Shigeru; Taki, Yasuo; Mori, Kazuhiro; Misawa, Yoshihiko; and Tanaka, Souhei, 4,327,482, Cl. 29-740.000.

Tanaka, Toru; and Tomizu, Yutaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Suspension system for automotive vehicles. 4,327,927, Cl. 280-96.100.

Tanaka, Toshiharu; Tsuda, Naoteru; and Arase, Kazuhide, to Matsushita Electric Industrial Co., Ltd. Piezoelectrically driven tuning fork with damping means. 4,328,442, Cl. 310-326.000.

Tanii, Seisuke: *See—*
Hamanishi, Yoichi; Honma, Akiteru; Nihashi, Iwao; and Tanii, Seisuke, 4,327,569, Cl. 72-239.000.

Tanimoto, Akira: *See—*
Hashimoto, Shintaro; and Tanimoto, Akira, 4,328,562, Cl. 364-900.000.

Tanny, Michael W., to Memorex Corporation. Magnetic tape reel. 4,327,879, Cl. 242-71.800.

Tarbutton, Kent S.; and Zemke, Ronald O., to Minnesota Mining and Manufacturing Company. Transparent friction surface sheet material. 4,328,274, Cl. 428-149.000.

Tasch, Al F., Jr.; Taylor, Geoff W.; and Chatterjee, Pallab K., to Texas Instruments Incorporated. Taper isolated ram cell without gate oxide. 4,328,511, Cl. 357-41.000.

Tateyama, Yuki: *See—*
Kondow, Kiyohiro; Yoshida, Tetuo; and Tateyama, Yuki, 4,328,150, Cl. 523-400.000.

Tawara, Katsuya: *See—*
Ogata, Masaru; Tawara, Katsuya; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Takahashi, Toshio, 4,328,348, Cl. 548-335.000.

Taylor, Alwyn H., to Duracell International Inc. Method for improving stability of Li/MnO_2 cells. 4,328,288, Cl. 429-48.000.

Taylor, Charles J., to Beecham Group Limited. Inhibition of corrosion of aluminium tubes by toothpastes. 4,328,205, Cl. 424-52.000.

Taylor, David H.: *See—*
Howland, Leland L.; Grant, Hendrie J.; and Taylor, David H., 4,327,558, Cl. 62-160.000.

Taylor, Don A. Solar siding for buildings. 4,327,708, Cl. 126-429.000.

Taylor, Geoff W.: *See—*
Tasch, Al F., Jr.; Taylor, Geoff W.; and Chatterjee, Pallab K., 4,328,511, Cl. 357-41.000.

Taylor, Ralph C., Jr.: *See—*
Berenberg, John A.; Clabaugh, David M.; and Taylor, Ralph C., Jr., 4,328,448, Cl. 318-561.000.

TDK Electronics Co., Ltd.: *See—*
Hiromitsu, Hirayama, 4,328,458, Cl. 323-251.000.

Telchuk, Steve E., Jr.; Brown, Leslie H.; and Gerdes, Donald F., to Binks Manufacturing Company. Air washer/scrubber. 4,328,012, Cl. 55-90.000.

Teleflex Incorporated: *See—*
Bennett, William G., 4,327,600, Cl. 74-501.00R.

Telefonaktiebolaget L M Ericsson: *See—*
Samuelsson, Kurt A.; and Widl, Walter H. E., 4,328,584, Cl. 371-68.000.

Telex Computer Products, Inc.: *See—*
Pembroke, Richard W., 4,327,857, Cl. 226-190.000.

Telford, Thomas M., to Warn Industries, Inc. Automatic locking clutch with sliding clutch ring. 4,327,821, Cl. 192-35.000.

Teller, Charles J. Waste heat recovery unit. 4,327,670, Cl. 122-20.00B.

Tepsa, Brian; and Spector, George. Sky shepherd I. 4,327,818, Cl. 182-238.000.

Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; and DeMoute, Jean-Pierre, 4,328,167, Cl. 260-465.00F.

Texaco Development Corporation: *See—*
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,328,006, Cl. 48-62.00R.
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,328,008, Cl. 48-197.00R.

Texaco Inc.: *See—*
Muller, Ralph C.; and Decker, Thomas R., 4,327,769, Cl. 137-587.000.
Sequeira, Avilino, Jr., 4,328,092, Cl. 208-326.000.

Texacone Company, The: *See—*
Wheeler, John H., 4,327,924, Cl. 277-205.000.

Texas Instruments Incorporated: *See—*
Evans, Thomas E.; and Keyes, David S., 4,328,406, Cl. 200-293.000.
Haesly, Barry F.; Harris, Richard D.; Dierschke, Eugene G.; and Hailey, Michael R., 4,327,964, Cl. 350-96.200.
Henderson, Alva E., 4,328,395, Cl. 179-1.0SM.
Lawson, James A., 4,328,408, Cl. 219-10.55B.
Noble, Robert T., 4,328,571, Cl. 368-87.000.
Rao, G. R. Mohan, 4,328,510, Cl. 357-41.000.
Slagel, Gary A.; and Bonfield, Peter L., 4,327,953, Cl. 339-17.0CF.
Tasch, Al F., Jr.; Taylor, Geoff W.; and Chatterjee, Pallab K., 4,328,511, Cl. 357-41.000.

Thaler, Michael, to Pitney Bowes Inc. Dynamic memory refresh system with additional refresh cycles. 4,328,566, Cl. 365-222.000.

Theeuwes, Felix: *See—*
Cortese, Richard; and Theeuwes, Felix, 4,327,725, Cl. 128-260.000.

Theis, Peter F. Total service telephone answering system. 4,328,396, Cl. 179-6.040.

Theobald, Hans: *See—*
Zeeh, Bernd; Theobald, Hans; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,328,236, Cl. 424-272.000.

Thermo King Corporation: *See—*
Howland, Leland L.; Grant, Hendrie J.; and Taylor, David H., 4,327,558, Cl. 62-160.000.

Theuer, Richard C.: *See—*
Gabby, John L.; Ashby, Gerald K.; Cameron, Dennis W.; and Theuer, Richard C., 4,328,217, Cl. 424-195.000.

Theysohn, Friedrich, to Friedrich Theysohn, Firma. Method of coating dual-worm extruder bores. 4,327,859, Cl. 228-107.000.

Thielex Plastics Corporation: *See—*
de Matteo, Mario A., 4,327,832, Cl. 206-328.000.

Thinnes, Joel H., to Weyerhaeuser Company. Incontinent pad. 4,327,732, Cl. 128-290.00R.

Thomas, Rudolf; Stetter, Jorg; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. N-Pyrimidinylmethyl-haloacetanilide compounds and herbicidal compositions. 4,328,029, Cl. 71-92.000.

Thomas, Thomas J.: *See—*
Sandefur, Charles W.; Lindow, Donald F.; and Thomas, Thomas J., 4,327,998, Cl. 8-524.000.

Thompson, David A.: *See—*
Bajorek, Christopher H.; Chance, Dudley A.; Ho, Chung W.; and Thompson, David A., 4,328,530, Cl. 361-308.000.

Thompson, Kenneth P., to Champion International Corporation. Fluid container. 4,327,861, Cl. 229-17.00G.

Thomson-Brandt: *See—*
Godefroy, Pierre, 4,328,117, Cl. 252-305.000.

Thomson-CSF: *See—*
Battail, Gerard; and Mollat du Jourdin, Patrick, 4,328,582, Cl. 371-37.000.
Gastinel, Jean, 4,328,557, Cl. 364-900.000.

Thornton, Carrol G.: *See—*
Dudley, Jerry E.; and Thornton, Carrol G., 4,328,416, Cl. 250-202.000.

Thorogood, Peter B., to Burroughs Wellcome Co. Imidazole derivatives and salts thereof and pharmaceutical formulations useful in thrombo-embolic disorders. 4,328,234, Cl. 424-265.000.

Thorson, Donald L.: *See—*
Baldwin, Harry L.; Bergschneider, Beryl D.; Chamoff, Martin E.; Miller, Irving L.; Piller, Don W.; Robinett, Max J.; and Thorson, Donald L., 4,328,544, Cl. 364-405.000.

Thorwart, Werner: *See—*
Ulrich, Gebert; Thorwart, Werner; Komarek, Jaromir; Cartheuser, Carl; Popendiker, Kurt; and Greve, Heinz-Gunther, 4,328,227, Cl. 424-250.000.

Thubeauville, Heinz: *See—*
Pries, Erich; and Thubeauville, Heinz, 4,328,072, Cl. 201-1.000.

Thue, Baard H., to Honeywell Inc. Unambiguous doppler radar. 4,328,495, Cl. 343-17.2PC.

Tiedtke, Wille: *See—*
Engel, Arno; Laucht, Walter; and Tiedtke, Wille, 4,327,900, Cl. 266-193.000.

Tinnes, Bernhard J., to Didier-Werke AG. Sliding gate nozzles. 4,327,847, Cl. 222-591.000.

Tokashiki, Yuji: *See—*
Takeuchi, Osamu; Chiba, Satoshi; Komiya, Satoru; Komatsu, Satoshi; Asada, Kazuo; Tokashiki, Yuji; and Shimazaki, Hiroshi, 4,327,991, Cl. 355-3.0SH.
Tokitomo, Kazuo: *See—*
Kurahashi, Toshio; Tokitomo, Kazuo; and Ono, Toshihiko, 4,328,262, Cl. 427-93.000.
Kurahashi, Toshio; Tokitomo, Kazuo; and Kiriseko, Tadashi, 4,328,263, Cl. 427-93.000.
Tokunaga, Takeshi: *See—*
Matsuoka, Shigeru; Tsubaki, Toshio; Tokunaga, Takeshi; Yonekura, Seiji; Nakamura, Kenji; and Suzuki, Mituo, 4,328,540, Cl. 364-167.000.
Tokyo Denryoku Kabushiki Kaisha: *See—*
Abe, Masao; Kawahara, Haruo; Kogure, Yoichiro; Maeohmichi, Masahiro; Takeuchi, Tetsuo; and Karashima, Norihiko, 4,328,556, Cl. 364-900.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Abe, Masao; Kawahara, Haruo; Kogure, Yoichiro; Maeohmichi, Masahiro; Takeuchi, Tetsuo; and Karashima, Norihiko, 4,328,556, Cl. 364-900.000.
Iwai, Hiroshi; and Nishi, Yoshio, 4,327,476, Cl. 29-571.000.
Matsuo, Katsuharu; and Hotta, Tomio, 4,327,502, Cl. 34-43.000.
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Usuba, Takahiro; Iinuma, Kazuhiro; Suzuki, Soichi; and Abe, Yukito, 4,328,490, Cl. 340-715.000.
Yamaura, Mitsuru; Kondow, Ryotaro; and Matsuzawa, Kunio, 4,328,551, Cl. 364-492.000.
Yanai, Noboru; Komori, Toshiyuki; Ichioka, Atushi; and Imooka, Masanori, 4,328,488, Cl. 340-578.000.
Toldy, Lajos: *See—*
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Tolley, William K.; and Corral, Francisco J., to UOP Inc. Ammoniacal nickel leach of laterites. 4,328,192, Cl. 423-150.000.
Tomatsu, Yoshio: *See—*
Mori, Akira; Noda, Sekijiro; Osuo, Hiroshi; Kanazawa, Akio; Nishimura, Tadahiko; Yamamoto, Masatoshi; and Tomatsu, Yoshio, 4,328,377, Cl. 568-798.000.
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, to Yamaha Hatsudoki Kabushiki Kaisha. Rear arm bearing structure for motorcycle. 4,327,812, Cl. 180-226.000.
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, to Yamaha Hatsudoki Kabushiki Kaisha. Frame for two-wheeled vehicle. 4,327,930, Cl. 280-284.000.
Tominaga, Shinji; and Matsumoto, Toshiaki, to Minolta Camera Kabushiki Kaisha. Data recording device for cameras. 4,327,979, Cl. 354-105.000.
Tomita, Kuniyuki: *See—*
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Tomko, Frederick G.: *See—*
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Tompkins, Russell E.: *See—*
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Topper Manufacturing Corporation: *See—*
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Torikai, Eiichi: *See—*
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Toro Company, The: *See—*
Bricko, Thomas K.; and Kallevig, Jeffrey B., 4,327,539, Cl. 56-113.000.
Torok, Ernest J.: *See—*
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Tottori Sanyo Electric Co., Ltd.: *See—*
Iwata, Mitsuo; Wada, Hajime; Iwasa, Tomoyuki; and Tsuchino, Kunio, 4,328,520, Cl. 360-73.000.
Townsley, Phillip M.: *See—*
Chalmers, William T.; Kutney, James P.; Salisbury, Phillip J.; Stuart, Kenneth L.; Townsley, Phillip M.; and Worth, Brian R., 4,328,309, Cl. 435-126.000.
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Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; Yamamoto, Yasushi; and Ichinohe, Shoji, to Shin-Etsu Chemical Co., Ltd. Novel organosilicon compounds and anti-tumor agents containing the same. 4,328,216, Cl. 424-184.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Akutagawa, Kenichi; Yoshida, Hitoshi; Hattori, Tadashi; Takata, Akira; and Fukuda, Tamotsu, 4,327,685, Cl. 123-402.000.
Hamanishi, Yoichi; Honma, Akiteru; Nihashi, Iwao; and Tanii, Seisuke, 4,327,569, Cl. 72-239.000.
Kanno, Masato; and Yamamoto, Kyoji, 4,327,783, Cl. 141-349.000.
Nakayama, Haruhiko; Uchida, Kiyoshi; Sugiyama, Masahiko; and Konishi, Hiromu, 4,327,820, Cl. 188-370.000.
Sami, Hiroshi; and Ueda, Tatehito, 4,327,684, Cl. 123-387.000.
Suganuma, Akihiko, 4,327,926, Cl. 280-95.00R.
Takeda, Keiso, 4,327,675, Cl. 123-52.00M.
Tanaka, Toru; and Tomizu, Yutaka, 4,327,927, Cl. 280-96.100.
Yoneda, Tetsuzo; Sogo, Yoshitaka; Fukushima, Masami; and Miyagawa, Shinichi, 4,327,598, Cl. 74-467.000.
Tozaki, Yasuyuki; Ueda, Minoru; Hirata, Takeyuki; and Anezaki, Syoji, to Sumitomo Metal Industries, Ltd. Steel making process and apparatus. 4,328,030, Cl. 75-60.000.
Trager, John E., to Procon International Inc. Vapor-liquid contacting apparatus. 4,328,177, Cl. 261-114.0JP.
Trank, Robert: *See—*
Aldridge, Lionel D.; and Trank, Robert, 4,327,954, Cl. 339-64.00M.
Treso, Bertalan: *See—*
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Trott, W. James; and Jarzynski, Jacek, to United States of America, Navy. Array shading for a broadband constant directivity transducer. 4,328,569, Cl. 367-103.000.
Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Seeger, Ernst; Engelhardt, Gunther; and Zimmermann, Rainer, to Boehringer Ingelheim GmbH. Suppressing pain with benzothiazol-2(3H)-ones. 4,328,235, Cl. 424-270.000.
Truscheit, Ernst: *See—*
Boshagen, Horst; Sitt, Rudiger; and Truscheit, Ernst, 4,328,233, Cl. 424-267.000.
TRW Inc.: *See—*
McLeod, Fenwick R., Jr., 4,328,459, Cl. 323-300.000.
Tryan, Fredrick W., to Lake Center Industries. Brush speed sensing control for vacuum cleaner. 4,328,522, Cl. 361-33.000.
Tsigdinos, George A.; Weber, Thomas R.; and Moore, Fred W., to Amax Inc. Polyvinyl chloride polymer compositions containing trizinc dimolybdate monohydrate and zinc phosphite for smoke suppression. 4,328,152, Cl. 524-406.000.
Tsubaki, Toshio: *See—*
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Tsuji, Yoshiharu; and Namura, Shigekazu, to Nissha Printing Co., Ltd. Transfer material for seamless coloration of cylindrical article. 4,328,268, Cl. 428-40.000.
Tsurumi, Yoshihiro; Fujioka, Tomio; Matsuzaki, Toshio; and Wakabayashi, Hidechika, to Mitsubishi Gas Chemical Company, Inc. Process for production of peroxidase. 4,328,312, Cl. 435-192.000.
Tuggle, William E. Sailboat carrier. 4,327,933, Cl. 280-414.200.
Turner, Dana L. Panel door and method of construction. 4,327,788, Cl. 144-319.000.
Turner, Ralph W.: *See—*
Bachmann, Lothar; Powell, John A.; and Turner, Ralph W., 4,327,893, Cl. 251-159.000.
Tusinski, Joseph; Hill, Phillip D.; and Lund, Clarence J., to Coburn Optical Industries, Inc. Ophthalmic lens deblocking - method and apparatus. 4,328,060, Cl. 156-344.000.
Ubezio, Lorenzo, to Reppisch-Werke AG. Drafting apparatus. 4,327,499, Cl. 33-438.000.
Uchida, Kiyoshi: *See—*
Nakayama, Haruhiko; Uchida, Kiyoshi; Sugiyama, Masahiko; and Konishi, Hiromu, 4,327,820, Cl. 188-370.000.
Uchida, Yoshimi: *See—*
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Uchiyama, Takashi: *See—*
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Udovich, Carl A., to Standard Oil Company (Indiana). Catalyst for the oxidation of butane to maleic anhydride. 4,328,120, Cl. 252-435.000.
Udovich, Carl A.; and Bertolacini, Ralph J., to Standard Oil Company (Indiana). Catalyst for the production of maleic anhydride by the oxidation of butane. 4,328,126, Cl. 252-435.000.
Ueba, Hisaaki: *See—*
Nakamura, Masaaki; and Ueba, Hisaaki, 4,328,055, Cl. 156-167.000.
Ueda, Kenji: *See—*
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Ueda, Minoru: *See—*
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Ueda, Takashi: *See—*
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Ueki, Susumu: *See—*
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Ueno, Hajime: *See—*
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Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,327,930, Cl. 280-284.000.
Uhlmann, Joachim, to Gevipi AG. Pair of hard material plaques for a hot and cold water mixer valve. 4,327,758, Cl. 137-625.170.
Ulrich, Gebert; Thorwart, Werner; Komarek, Jaromir; Cartheuser, Carl; Popendiker, Kurt; and Greve, Heinz-Gunther, to Hoechst Aktiengesellschaft. Novel O-propyloximes. 4,328,227, Cl. 424-250.000.
Unemi, Norio: *See—*
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Unetic, Frank D.: *See—*
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Union Carbide Corporation: *See—*
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Roeckel, Winfried; Scaccia, Carl; and Conti, John A., 4,328,175, Cl. 261-91.000.
Zupancic, Ronald L.; and Urry, Lewis F., 4,328,289, Cl. 429-54.000.
Union Oil Company of California: *See—*
Erich, Otis G., Jr., 4,327,814, Cl. 181-121.000.
Union Special Corporation: *See—*
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Unisearch Limited: *See—*
Giutronich, John E.; and Mills, David R., 4,327,969, Cl. 350-296.000.
Ingles, Owen G.; and Lim, Nam, 4,328,035, Cl. 106-84.000.
United International Research, Inc.: *See—*
Globus, Alfred R., 4,328,004, Cl. 44-56.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
North, Desmond J., 4,327,588, Cl. 73-599.000.
United States Gypsum Company: *See—*
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Williams, William R., 4,327,828, Cl. 198-729.000.
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Agriculture: *See—*
DeLoach, John R.; Harris, Robert L.; Ihler, Garret M.; and Mayer, Richard T., 4,327,710, Cl. 128-1.00R.
Air Force: *See—*
Burkes, William M., Jr., 4,327,868, Cl. 239-265.150.
Lawhorn, William S., 4,327,884, Cl. 244-3.100.
Army: *See—*
Colpack, Michael J.; Pasko, Edward; and Johnson, Richard W., 4,328,516, Cl. 358-113.000.
DeSantis, Charles M.; Zannella, Albert H.; Begala, Michael W.; Wills, John R.; and Czerwinski, Watson P., 4,328,501, Cl. 343-749.000.
Smith, Roger R., 4,327,897, Cl. 254-395.000.
Energy: *See—*
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Fincke, James R., 4,327,592, Cl. 73-861.910.
Harrar, Jackson E.; Lorensen, Lyman E.; and Locke, Frank E., 4,328,106, Cl. 210-700.000.
Lorenzo, Donald K.; and Van Cleve, John E., Jr., 4,328,423, Cl. 250-506.000.
Wilhelm, William G., 4,327,707, Cl. 126-426.000.
Health and Human Services: *See—*
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Health & Human Services: *See—*
Chalmers, William T.; Kutney, James P.; Salisbury, Phillip J.; Stuart, Kenneth L.; Townsley, Phillip M.; and Worth, Brian R., 4,328,309, Cl. 435-126.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Pivirotto, Thomas J. High power metallic halide laser. 4,328,464, Cl. 330-4.300.
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Scharp, Glenn A., 4,328,502, Cl. 343-771.000.
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Usami, Susumu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Lever switch. 4,328,431, Cl. 307-10.00R.
Usardi, Maria M.: *See—*
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van de Moesdijk, Cornelis G. M., to Stamicarbon, B.V. Cyclic process for the preparation and processing of a hydroxylammonium salt solution. 4,328,198, Cl. 423-371.000.

van den Brink, Hans G.; and Lamboo, Theodorus F., to U.S. Philips Corporation. Gas discharge laser device. 4,328,467, Cl. 372-98.000.

Van den Broek, Philippe; Gaudu, Rene; and Carrier, Paul, to MATRA, A French Society. Installation for detecting anomalies in inflating of the tires of a guided vehicle. 4,328,479, Cl. 340-58.000.

Van Den Plas, Roger J. Q.; Ruts, Josephus M.; and Driessen, Antonius J. G. C., to U.S. Philips Corporation. High-pressure discharge lamp. 4,328,445, Cl. 315-46.000.

Vander Bok, Arnold, to General Motors Corporation. Semi-floating valve bridge. 4,327,677, Cl. 123-90.400.

van der Laan, Jan G., to National Grondbezit N.V.; and Agterhof Beheer N.V. Window-frame having a sash-window arranged in it. 4,327,524, Cl. 49-425.000.

Van Ginhoven, Robert M., to Sperry Corporation. Row crop harvester with self-cleaning belt feed. 4,327,542, Cl. 56-98.000.

Vanhorebeek, Remi; Geyken, Erwin; Mayer, Peter; Schausberger, Helmut; and Brunner, Rudolf, to AGFA-Gevaert Aktiengesellschaft. Apparatus for treating photographic materials. 4,327,988, Cl. 354-320.000.

Vanover, Joel L.: *See*—
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Vargo, Louis M. Disposable floor mat. 4,328,275, Cl. 428-156.000.

Varwig, Juergen: *See*—
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Vennor, Philip, to ORDA Industries (1969) Ltd. Board game. 4,327,919, Cl. 273-236.000.

Verdet, Pierre: *See*—
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Versfelt, Charles C.: *See*—
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Victor Company of Japan, Ltd.: *See*—
Furihato, Makoto; Machida, Toyotaka; and Ikemura, Yuichi, 4,328,513, Cl. 358-19.000.
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Victor Equipment Company: *See*—
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Victor F. Weaver, Inc.: *See*—
Martin, Eugene G., 4,327,463, Cl. 17-11.000.

Viessmann, Hans. Fuel burning boiler. 4,327,672, Cl. 122-136.00R.

Vignau, Michel; and Heymes, Rene, to Roussel Uclaf. Novel 7-(2-amino-4-thiazolyl)-acetamido-cephalosporanic acids. 4,328,225, Cl. 424-246.000.

Vilk, Peter, to B.H.F. (Engineering) Limited. Heat retaining shield in glass gob former. 4,328,023, Cl. 65-328.000.

Villers, Philippe: *See*—
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Vinals, Joaquin F.: *See*—
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Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, to Givaudan Corporation. 3-Dicyanomethylene-4-isothiazolines. 4,328,347, Cl. 548-213.000.

Virginia Chemicals Inc.: *See*—
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Vis, Jan; and de Klein, Willem J., to Akzona Incorporated. Process for the preparation of sulfur-containing additives for lubricant compositions. 4,328,112, Cl. 252-47.500.

Vitzthum, Otto: *See*—
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Vivian, Lloyd R., Jr., to Ford Motor Company. Steering wheel having inclined leaf spring core. 4,327,601, Cl. 74-552.000.

Vock, Manfred H.: *See*—
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Voest-Alpine Aktiengesellschaft: *See*—
Eisenkolb, Klaus, 4,327,647, Cl. 104-174.000.
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Vogel, Roger F.: *See*—
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,328,128, Cl. 252-441.000.

Vogele, Richard; and Lanzerath, Gunter, to Borg-Warner Corporation. Wedging-type freewheeling clutch. 4,327,822, Cl. 192-41.00A.

Volbeda, Johan H., to Hollandsche Aanneming Maatschappij B.V. Rotary cutter head with jet flushing blades. 4,327,507, Cl. 37-67.000.

Volkswagenwerk Aktiengesellschaft: *See*—
Fiala, Ernst, 4,327,577, Cl. 73-115.000.

Vollhardt, K. Peter C.; and Naiman, Alaric, to United States of America, Health and Human Services. Cobalt-catalyzed one-step synthesis of annulated pyridines. 4,328,343, Cl. 546-145.000.

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von Kamienski, Elard S.; and Loffler, Heiner. Method of applying flavorings and edible fats on to deep-frozen foods with free apportionability so as to obtain food ready for consumption merely after adding water and applying heat. 4,328,253, Cl. 426-307.000.

von Waclawiczek, Herbert: *See*—
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Voorhees, John E.; and Johnson, Thomas M., to Hobart Corporation. Self steering blade guide for a band saw. 4,327,621, Cl. 83-820.000.

Vresk, Franklin V.: *See*—
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Vyzkumny ustav chemickych zrizeni: *See*—
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W. Schlafhorst & Co.: *See*—
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Wachter, Michael P.: *See*—
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Wacker Chemie GmbH: *See*—
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Wada, Hajime: *See*—
Iwata, Mitsuo; Wada, Hajime; Iwasa, Tomoyuki; and Tsuchino, Kunio, 4,328,520, Cl. 360-73.000.

Wada, Shigetaka; and Yamada, Toshio, to NGK Insulators, Ltd. Heater for air-fuel mixture having heating element of positive temperature coefficient resistor. 4,327,697, Cl. 123-549.000.

Wadsworth, Francis T.: *See*—
Dotson, Anderson O., Jr.; Wadsworth, Francis T.; and Wolford, Lionel T., 4,328,357, Cl. 560-83.000.

Wagner, Kuno: *See*—
Haas, Peter; Muller, Heinz; Seifert, Peter; Wagner, Kuno; Findeisen, Kurt; and Konig, Klaus, 4,328,321, Cl. 521-108.000.

Wagoner, Jesse W.: *See*—
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Waldburger, Peter, to Continental Group of Canada Ltd., The. Purveying cooked food. 4,328,254, Cl. 426-393.000.

Waldron, Richard W.: *See*—
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Wallace, Patrick A.: *See*—
Bronson, Paul A.; and Wallace, Patrick A., 4,327,720, Cl. 128-207.150.

Wallmark, Roger. Arrangement in working lamps. 4,328,536, Cl. 362-427.000.

Walter, John, to Continental Group, Inc., The. Container and closure therefor. 4,327,842, Cl. 220-367.000.

Walther, William D., to Dayton-Walther Corporation. Reusable seals with double shell mountings. 4,327,922, Cl. 277-37.000.

Ward, James D.: *See*—
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Ward, Terence J.; and White, John F., to John Wyeth & Brother Limited. Benzoquinolizines, anti-secretory compositions containing them, and methods of treating ulcers employing them. 4,328,232, Cl. 424-258.000.

Warn Industries, Inc.: *See*—
Telford, Thomas M., 4,327,821, Cl. 192-35.000.

Wasserman, David; Versfelt, Charles C.; Hahn, Dowon; and Wachter, Michael P., to Ethicon, Inc. Absorbable polymer-drug compounds and method for making same. 4,328,204, Cl. 424-19.000.

Wassermann, Carl I., to North Atlantic Industries, Inc. Magnetically actuated equipment. 4,327,638, Cl. 101-93.090.

Watanabe, Seiichi: *See*—
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Watanabe, Shutoku, to Hitachi, Ltd. Channel selection apparatus for television receiver. 4,328,517, Cl. 358-191.100.

Watanabe, Toshihiko; Takenouchi, Naoki; Soga, Mitsurou; and Kawakami, Kouji, to Kobe Steel, Ltd. Motor-driven welding machine. 4,328,412, Cl. 219-125.100.

Watanabe, Yoshihachi: *See*—
Ogata, Masaru; Tawara, Katsuya; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Takahashi, Toshio, 4,328,348, Cl. 548-335.000.

Watanabe, Yutoka, to Aisin Seiki Kabushiki Kaisha. Retainer assembly for molding strips and method of securing molding strips in place. 4,328,052, Cl. 156-91.000.

Water Front Products, Inc,: *See*—
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Watkins-Johnson Company: *See*—
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Watson, Herman L.; and Sackner, Marvin A., to Respitrace Corporation. Device for measuring respiration volume. 4,327,741, Cl. 128-728.000.

Watson, Roger W.; and Strukl, Joseph S., to Standard Oil Company (Indiana). Modified overbased sulfonates and phenates. 4,328,111, Cl. 252-33.400.

Way, Lewis J., to E M I Limited. Reading secure magnetic documents. 4,328,519, Cl. 360-67.000.

Webb, Herbert H., to Westinghouse Canada Inc. Dual mode sonar system. 4,328,568, Cl. 367-101.000.

Webb, John C.: *See*—
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Weber, Helmut; and Reitberger, Peter H., to NCR Corporation. Optical sensing of ink jet printing. 4,328,504, Cl. 346-75.000.

Weber, John M. Programmer unit with composite calculation capability. 4,328,550, Cl. 364-474.000.

Weber, Thomas R.: *See*—
Tsigdinos, George A.; Weber, Thomas R.; and Moore, Fred W., 4,328,152, Cl. 524-406.000.

Weevers, Henri H., to Machinefabriek Mokveld B.V. Control valve. 4,327,757, Cl. 137-625.300.

Weghaupt, Erich: *See*—
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Wehner, George O.; Schultz, Stephen J.; and Zito, Ronald R., to PPG Industries, Inc. Threshold cart for flat glass forming apparatus and method of use. 4,328,021, Cl. 65-27.000.

Weidler, Charles H.: *See*—
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Weigel, David C.: *See*—
Anders, Leon W.; and Weigel, David C., 4,328,181, Cl. 422-56.000.

Weiler, Raywood C. Swing down spare wheel tire carrier. 4,327,848, Cl. 224-42.060.

Weirich, Walter; and Dettmers, Michael, to Gewerkschaft Eisenhutte Westialia. Hydraulic roof support control system. 4,327,628, Cl. 91-522.000.

Weisrock, William P., to Standard Oil Company (Indiana). Semi-continuous method for production of xanthan gum using *Xanthomanas campestris* ATCC 31600 and *Xanthomanas campestris* ATCC 31602. 4,328,308, Cl. 435-104.000.

Weisrock, William P., to Standard Oil Company (Indiana). Semi-continuous method for production of xanthan gum using *Xanthomonas campestris* ATCC 31601. 4,328,310, Cl. 435-104.000.

Weiss, Arnold A., to AMF Incorporated. Ultrasonic tire testing apparatus. 4,327,579, Cl. 73-146.000.

Weiss, Martin J.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,328,358, Cl. 560-121.000.

Welch, Cletus N.; Loehr, Clifford E.; Crawford, Roger A.; and Carbaugh, John E., to PPG Industries, Inc. Process for producing calcium hypochlorite. 4,328,200, Cl. 423-474.000.

Wellendorf, Klaus, to Dr. Ing. -Rudolf Hell GmbH. Method and a device for recorrecting standard color corrections in a color picture recording. 4,328,515, Cl. 358-80.000.

Wellner, Wolfgang; Botta, Artur; and Gruber, Hermann, to Bayer Aktiengesellschaft. Process for the production of polyureas. 4,328,330, Cl. 528-45.000.

Wells, Frederic D., Jr.: *See*—
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Welsch, Donald W. Circular snowshoe. 4,327,504, Cl. 36-122.000.

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Fuchs, Harold E., 4,328,046, Cl. 148-6.200.
Maschler, Francis S.; and Seifert, Gary A., 4,328,087, Cl. 204-297.00W.

Westhead, William T., to Scapa Dryers, Inc. Dryer felt having a soft, bulky surface. 4,327,779, Cl. 139-383.00A.

Westinghouse Canada Inc.: *See*—
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Westinghouse Electric Corp.: *See*—
Frink, Russell E.; and Milianowicz, Stanislaw A., 4,328,403, Cl. 200-148.00A.
Lee, Ronald L., 4,328,590, Cl. 455-203.000.
Vale, Christopher R., 4,328,497, Cl. 343-18.00E.

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Whaley, Bennie M.; and Whaley, Janice C. Apparatus for filtering frying oil. 4,328,097, Cl. 210-167.000.

Whaley, Janice C.: *See*—
Whaley, Bennie M.; and Whaley, Janice C., 4,328,097, Cl. 210-167.000.

Wheeler, Everett T. Window casement. 4,327,795, Cl. 160-98.000.

Wheeler, John H., to Texacone Company, The. Seal for elevator drive mechanism. 4,327,924, Cl. 277-205.000.

Whirlpool Corporation: *See*—
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Whitcomb, Carl E., to Bd. of Regents for the Okla. Agri. and Mech. Colleges Acting For & On Behalf of Oklahoma State University. Micronutrient fertilizer. 4,328,025, Cl. 71-23.000.

White, Charles F., to United States of America, Navy. Delay control for a pulse repeat-back jamming system. 4,328,496, Cl. 343-18.00E.

White, John F.: *See*—
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White, Mary A.: *See*—
Bergman, Robert G.; Becker, Paul N.; and White, Mary A., 4,328,164, Cl. 260-439.0CY.

White, Robert I., Jr. Therapeutic method of use for miniature detachable balloon catheter. 4,327,734, Cl. 128-325.000.

Whitehead, Rickey E. Collapsible jack. 4,327,896, Cl. 254-88.000.

Whitehouse, Daniel L., to Solarex Corporation. Method for applying antireflective coating on solar cell. 4,328,260, Cl. 427-75.000.

Whittaker Corporation: *See*—
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Whitted, Hugh E., III, to Akzona Incorporated. Hydrostatic pipe splicing method. 4,327,471, Cl. 29-421.00R.

Wickmann-Werke Boblingen GmbH: *See*—
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Wilhelm Hegenscheidt Gesellschaft mbH: *See*—
Berstein, Garri, 4,327,568, Cl. 72-199.000.

Wilhelm, William G., to United States of America, Energy. Solar collector. 4,327,707, Cl. 126-426.000.

Williams, Robert O. Pipe insulator. 4,327,778, Cl. 138-149.000.

Williams, William R., to U.S. Industries, Inc. Wear plate and corner wheel mounting arrangement for automated animal feed conveyors. 4,327,828, Cl. 198-729.000.

Willis, Clive: *See*—
Hackett, Peter A.; Nip, Wing S.; and Willis, Clive, 4,328,078, Cl. 204-158.00R.

Willms, Rolf: *See*—
Haese, Egon; Willms, Rolf; and Schultheiss, Karl D., 4,328,189, Cl. 422-224.000.

Wills, John R.: *See*—
DeSantis, Charles M.; Zannella, Albert H.; Begala, Michael W.; Wills, John R.; and Czerwinski, Watson P., 4,328,501, Cl. 343-749.000.

Wilmer, Gerhard: *See*—
Geidies, Ulrich; and Wilmer, Gerhard, 4,328,011, Cl. 55-89.000.

Wilshire, Robert A.: *See*—
Kelly, Calvin E.; and Wilshire, Robert A., 4,327,635, Cl. 101-18.000.

Wilson, Charles A.: *See*—
Burk, George A.; Witt, Brian G.; Swogger, Kurt W.; and Wilson, Charles A., 4,328,171, Cl. 260-465.400.

Wilson, Michael E., to Milliken Research Corporation. Comminuted inorganic materials. 4,328,041, Cl. 106-308.00Q.

Wilson, Thomas A.; and Ward, James D., to Dover Corporation. Butterfly valve having leak detecting means. 4,327,765, Cl. 137-312.000.

Wilson, Wilfred W., to Ontario, Limited. Reciprocating pusher conveyor. 4,327,826, Cl. 198-740.000.

Wimberly, Joseph. Insulated outlet cover. 4,327,841, Cl. 220-18.000.

Wimpey Laboratories Limited: *See*—
Millis, Andrew D., 4,327,759, Cl. 137-3.000.

Winiecki, Henry F.: *See*—
Winiecki, Tadeus, 4,327,931, Cl. 280-295.000.

Winiecki, Martha M.: *See*—
Winiecki, Tadeus, 4,327,931, Cl. 280-295.000.

Winiecki, Tadeus, to Winiecki, Henry F.; and Winiecki, Martha M. Crash resistant motorcycle with integral door and stand. 4,327,931, Cl. 280-295.000.

Winsel, August, to Janome Sewing Machine Co. Ltd. Lithium peroxide primary element. 4,328,291, Cl. 429-101.000.

Winslow, Charles E., Jr.; and Ellis, Leonard C., to Virginia Chemicals Inc. Treatment of waste stream from pentaerythritol production. 4,328,366, Cl. 562-513.000.

Wisniewski, Joseph M., to Steelcase Inc. Furniture glide and furniture. 4,327,461, Cl. 16-42.00R.

Wissner, Allan, to American Cyanamid Company. 15-Deoxy-16-substituted-19-chloro-20-nor-prostane derivatives of the E and F series. 4,328,359, Cl. 560-121.000.

Witek, Stanislaw; Grobelny, Damian; Gorska-Poczopko, Jadwiga; Bakuniak, Edmund; Bakuniak, Irena; and Ptaszkowska, Janina, to Instytut Przemyslu Organicznego & Politechnika Wroclawska. Quaternary benzylmorpholine salts having formyl or nitrile substituents in a ring and fungicidal compositions. 4,328,226, Cl. 424-248.400.

Witt, Brian G.: *See—*
Burk, George A.; Witt, Brian G.; Swogger, Kurt W.; and Wilson, Charles A., 4,328,171, Cl. 260-465.400.

Woditsch, Peter: *See—*
Panek, Peter; Woditsch, Peter; Bayer, Eckhard; and Stutgens, Heribert, 4,328,040, Cl. 106-300.000.

Wohler, Hans-Joachim: *See—*
Alt, Werner; Kretzschmar, Siegfried; and Wohler, Hans-Joachim, 4,328,176, Cl. 261-111.000.

Wolf, Alfons: *See—*
Piesch, Steffen; and Wolf, Alfons, 4,328,326, Cl. 525-509.000.

Wolff, John G. Caster assembly with variable pitch bearing. 4,327,460, Cl. 16-18.00A.

Wolford, Lionel T.: *See—*
Dotson, Anderson O., Jr.; Wadsworth, Francis T.; and Wolford, Lionel T., 4,328,357, Cl. 560-83.000.

Wolrab, Milo. Method of sealing forage packages. 4,327,537, Cl. 56-1.000.

Wolsing, Wilhelm: *See—*
Musall, Reimar; and Wolsing, Wilhelm, 4,328,187, Cl. 422-179.000.

Wolvek, Sidney: *See—*
Hanson, Bruce L.; and Wolvek, Sidney, 4,327,709, Cl. 128-1.00D.

Wolverine Aluminum Corporation: *See—*
Fritz, Jack E., 4,327,528, Cl. 52-309.100.

Womako Maschinenkonstruktionen GmbH: *See—*
Lehmann, Hartmut, 4,327,780, Cl. 140-92.700.

Woo, James T. K., to SCM Corporation. Room temperature cure latices. 4,328,144, Cl. 523-408.000.

Wood, John F.: *See—*
Leeper, Charles G.; and Wood, John F., 4,327,794, Cl. 157-1.280.

Woodman, Brenda J.: *See—*
Murray, E. Donald; Barker, Larry D.; and Woodman, Brenda J., 4,328,252, Cl. 426-262.000.

Woods, Lee O., to General Electric Company. Method of assembling an electrical device. 4,327,481, Cl. 29-619.000.

Woodward, Clifford S., to Rolls-Royce Limited. Gas turbine engine power plant. 4,327,548, Cl. 60-226.00A.

Worth, Brian R.: *See—*
Chalmers, William T.; Kutney, James P.; Salisbury, Phillip J.; Stuart, Kenneth L.; Townsley, Phillip M.; and Worth, Brian R., 4,328,309, Cl. 435-126.000.

Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., to Upjohn Company, The. Mycobacterium fortuitum strain. 4,328,315, Cl. 435-253.000.

Wright, Charles H.: *See—*
Anderson, Raymond P.; Schmalzer, David K.; and Wright, Charles H., 4,328,088, Cl. 208-8.0LE.

Wright, David M.: *See—*
Cournoyer, Bernard T.; Bogren, Robert G.; and Wright, David M., 4,327,952, Cl. 312-184.000.

Wright, Frank C., to Synergo, Inc. Process and apparatus for forming dispersions. 4,328,107, Cl. 210-703.000.

Wright Line Inc.: *See—*
Cournoyer, Bernard T.; Bogren, Robert G.; and Wright, David M., 4,327,952, Cl. 312-184.000.

Wright, Peter J., to Ciba-Geigy AG. Stripping layers in diffusion transfer film. 4,328,301, Cl. 430-215.000.

Wrightson, John M., to Aerojet-General Corporation. Dimer isocyanate liner compositions. 4,328,281, Cl. 428-423.100.

Wu, Yulin, to Phillips Petroleum Company. Recovery of cyclohexanone from cyclohexylbenzene hydroperoxide acid cleavage product. 4,328,372, Cl. 568-361.000.

Wyatt, Robert H., Sr. Marine computer. 4,327,497, Cl. 33-274.000.

Wyman, Ransome J.; Alshin, Richard A.; and Gilbert, Charles H. Bicycle tire with compression amplification. 4,327,793, Cl. 152-323.000.

Xerox Corporation: *See—*
Barley, Steven D.; and Bright, Stephen K., 4,327,994, Cl. 355-14.00R.
Crystal, Richard G.; Gabor, Andrew; and Klein, Enrique J., 4,327,639, Cl. 101-93.340.
Demeny, Michael G.; Dunfield, John C. G.; and Gabor, Andrew, 4,328,453, Cl. 318-685.000.
D'Ortenzio, Remo J., 4,328,426, Cl. 250-578.000.
Gabor, Andrew, 4,328,450, Cl. 318-561.000.
Gauronski, John F.; and McGibbon, Gary M., 4,327,993, Cl. 355-14.0SH.
Holmes, Maurice F., 4,327,904, Cl. 271-35.000.
Ragen, Robert A.; and Herendeen, Carl E., 4,328,452, Cl. 318-685.000.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,328,469, Cl. 372-45.000.
Stoffel, James C., 4,328,425, Cl. 250-578.000.
Takeuchi, Osamu; Chiba, Satoshi; Komiya, Satoru; Komatsu, Satoshi; Asada, Kazuo; Tokashiki, Yuji; and Shimazaki, Hiroshi, 4,327,991, Cl. 355-3.0SH.

Yackiw, Charles, to Schlegel Corporation. Seal having resilient core and outer cover. 4,328,273, Cl. 428-122.000.

Yamada, Keiichi: *See—*
Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, 4,327,696, Cl. 123-506.000.

Yamada, Minoru: *See—*
Idota, Yoshio; and Yamada, Minoru, 4,328,306, Cl. 430-393.000.

Yamada, Toshio: *See—*
Wada, Shigetaka; and Yamada, Toshio, 4,327,697, Cl. 123-549.000.

Yamaguchi, Yukiharu: *See—*
Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, 4,328,337, Cl. 536-119.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Isaka, Yoshiharu, 4,327,811, Cl. 180-219.000.
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,327,812, Cl. 180-226.000.
Tominaga, Nobuyoshi; Kurai, Nobuyoshi; Ueno, Hajime; and Suzuki, Sadahide, 4,327,930, Cl. 280-284.000.

Yamamichi, Masayoshi; Suzuki, Masayuki; Murakami, Hiroyasu; and Ito, Tadashi, to Canon Kabushiki Kaisha. Device for suppressing mirror bounce in single lens reflex camera. 4,327,982, Cl. 354-156.000.

Yamamoto, Kazuo, to NSK-Warner K.K. Lock releasing device of a retractor provided with an emergency locking mechanism. 4,327,883, Cl. 242-107.40A.

Yamamoto, Kyoji: *See—*
Kanno, Masato; and Yamamoto, Kyoji, 4,327,783, Cl. 141-349.000.

Yamamoto, Masatoshi: *See—*
Mori, Akira; Noda, Sekijiro; Osuo, Hiroshi; Kanazawa, Akio; Nishimura, Tadahiko; Yamamoto, Masatoshi; and Tomatsu, Yoshio, 4,328,377, Cl. 568-798.000.

Yamamoto, Yasushi: *See—*
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; Yamamoto, Yasushi; and Ichinohe, Shoji, 4,328,216, Cl. 424-184.000.

Yamanaka, Koichi; Yamasaki, Ryuzo; Sakai, Yoshiharu; and Hirono, Takashi, to Mitsui Engineering and Shipbuilding Co., Ltd. Method for mounting ring-shaped construction on ship stern. 4,327,469, Cl. 29-407.000.

Yamasaki, Hiroyuki: *See—*
Nodera, Hisatoshi; Yamasaki, Hiroyuki; Miyamoto, Hiroyuki; and Ueda, Kenji, 4,328,433, Cl. 307-311.000.

Yamasaki, Ryuzo: *See—*
Yamanaka, Koichi; Yamasaki, Ryuzo; Sakai, Yoshiharu; and Hirono, Takashi, 4,327,469, Cl. 29-407.000.

Yamaura, Mitsuru; Kondow, Ryotaro; and Matsuzawa, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus and method for protection of electric power transmission lines and the like. 4,328,551, Cl. 364-492.000.

Yamaura, Susumu: *See—*
Kato, Mamoru; Yamaura, Susumu; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 4,328,265, Cl. 427-146.000.

Yamazaki, Hiroshi, to Sony Corporation. Anti-blooming charge transfer device. 4,328,432, Cl. 307-221.00D.

Yamazaki, Kazuhide; Morisawa, Masaomi; and Nakajima, Maki, to Nippon Kokuyu Tetsudo; and Kabushiki Kaisha Shibaura Seisakusho. Tie tamper. 4,327,645, Cl. 104-13.000.

Yanagida, Yoshitsugu; Higuchi, Mitsuo; Ito, Yoshiaki; Nakaji, Shigeru; and Ehiro, Syogo, to Kawasaki Steel Corporation; and Aichi Steel Works, Limited. Conditioning machine for brushing end face of metal material. 4,327,466, Cl. 29-90.00R.

Yanai, Noboru; Komori, Toshiyuki; Ichioka, Atushi; and Imooka, Masanori, to Tokyo Shibaura Denki Kabushiki Kaisha. Flame-detecting apparatus including a field-limiting device. 4,328,488, Cl. 340-578.000.

Yanizeski, George M.: *See—*
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,328,394, Cl. 174-106.00D.

Yano, Takeshi: *See—*
Suzuki, Gyoichi; Shimotsuma, Teruo; Higuchi, Masaaki; Sugawara, Tsunenori; and Yano, Takeshi, 4,327,899, Cl. 266-193.000.

Yardngy Electric Corporation: *See—*
Bilhorn, John M., 4,328,297, Cl. 429-222.000.

Yaron, Giora; Harari, Eliyahou; Hess, LaVerne D.; and Ma, Yueh Y., to Hughes Aircraft Co. Electron beam annealing of metal step coverage. 4,327,477, Cl. 29-576.00B.

Yasumura, Motoaki: *See—*
Ashizawa, Takeshi; and Yasumura, Motoaki, 4,328,050, Cl. 148-9.00R.

Yerbury, Michael J.: *See—*
Crow, William M.; and Yerbury, Michael J., 4,328,548, Cl. 364-449.000.

Yevick, George J. Prism plates for compact optical viewers. 4,327,968, Cl. 350-286.000.

Yoder, Max N., to United States of America, Navy. Phased array antenna for satellite. 4,328,498, Cl. 343-100.0SA.

Yoneda, Tetsuzo; Sogo, Yoshitaka; Fukushima, Masami; and Miyagawa, Shinichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Gear transmission apparatus for an automobile. 4,327,598, Cl. 74-467.000.

Yonekura, Seiji: *See—*
Matsuoka, Shigeru; Tsubaki, Toshio; Tokunaga, Takeshi; Yonekura, Seiji; Nakamura, Kenji; and Suzuki, Mituo, 4,328,540, Cl. 364-167.000.

Yoshida, Hitoshi: *See—*
Akutagawa, Kenichi; Yoshida, Hitoshi; Hattori, Tadashi; Takata, Akira; and Fukuda, Tamotsu, 4,327,685, Cl. 123-402.000.

Yoshida, Tetuo: *See*—
Kondow, Kiyohiro; Yoshida, Tetuo; and Tateyama, Yuki, 4,328,150, Cl. 523-400.000.

Yoshida, Tomio; Nagashima, Michiyoshi; Harigae, Shunji; Ichinose, Makoto; and Wakami, Noboru, to Matsushita Electric Industrial Co., Ltd. Optical recording device. 4,328,506, Cl. 346-108.000.

Yoshinaka, Shigeo; and Doya, Masaharu, to Mitsubishi Gas Chemical Co., Inc. Process for the production of aromatic dialdehydes. 4,328,374, Cl. 568-436.000.

Youngers, Stephen A., to J. I. Case Company. Trencher digging chain sprocket drive. 4,327,508, Cl. 37-86.000.

Yu, Cheng-Der; and Bruenner, Ursula, to Syntex (U.S.A.) Inc. Carbonate diester solutions of PGE-type compounds. 4,328,245, Cl. 424-305.000.

Zach, Hubert, to Micro Electronic Systems, Inc. Wire storage and wrapping tool. 4,327,781, Cl. 140-124.000.

Zahnraderfabrik Renk A.G.: *See*—
Zaunberger, Franz X.; and Kugler, Artur, 4,327,603, Cl. 74-688.000.

Zajer nee Balazs, Maria; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, to Richter Gedeon Vegyeszeti Gyar Rt. Method of treating psoriasis. 4,328,231, Cl. 424-256.000.

Zambelli, Adolfo: *See*—
Beach, David L.; and Zambelli, Adolfo, 4,328,123, Cl. 252-429.00B.

Zannella, Albert H.: *See*—
DeSantis, Charles M.; Zannella, Albert H.; Begala, Michael W.; Wills, John R.; and Czerwinski, Watson P., 4,328,501, Cl. 343-749.000.

Zaplotnik, Josef. Reading-apparatus. 4,327,889, Cl. 248-441.00B.

Zappa, Oswald L., to Avco Everett Research Laboratory, Inc. Apparatus for providing improved characteristics of a broad area electron beam. 4,328,443, Cl. 313-420.000.

Zaunberger, Franz X.; and Kugler, Artur, to Zahnraderfabrik Renk A.G. Compact transmission for tracked vehicles. 4,327,603, Cl. 74-688.000.

Zdravil, Josef: *See*—
Docekal, Jiri; Parma, Ludvik; Pelant, Ivan; Sladky, Petr; and Zdravil, Josef, 4,327,587, Cl. 73-590.000.

Zeeh, Bernd; Theobald, Hans; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Isoxazolyl carboxanilides, and their use for combating fungi. 4,328,236, Cl. 424-272.000.

Zeeh, Bernd: *See*—
Buschmann, Ernst; Goetz, Norbert; Zeeh, Bernd; and Varwig, Juergen, 4,328,380, Cl. 570-191.000.
Rentzea, Costin; Jung, Johann; Sauter, Hubert; Heilen, Gerd; and Zeeh, Bernd, 4,328,028, Cl. 71-76.000.

Zemek, Albert W.; Tomko, Frederick G.; and Knapp, David C., to Universal Instruments Corporation. Apparatus for selecting, transporting, and inserting single in-line components. 4,327,483, Cl. 29-741.000.

Zemke, Ronald O.: *See*—
Tarbutton, Kent S.; and Zemke, Ronald O., 4,328,274, Cl. 428-149.000.

Ziemann, Heinz: *See*—
Kabbe, Hans-Joachim; Mayer, Hildegard E.; Mayer, Annedore; Ziemann, Heinz; and Stoepel, Kurt, 4,328,223, Cl. 424-246.000.

Zimmer, Jon W., Sr., to Gas Research Institute. Removable flue baffles. 4,327,671, Cl. 122-44.00A.

Zimmermann, Rainer: *See*—
Trummlitz, Gunter; Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Seeger, Ernst; Engelhardt, Gunther; and Zimmermann, Rainer, 4,328,235, Cl. 424-270.000.

Zins, Howard M.: *See*—
Carnaghi, Arturo A.; and Zins, Howard M., 4,327,447, Cl. 2-247.000.

Zito, Ronald R.: *See*—
Wehner, George O.; Schultz, Stephen J.; and Zito, Ronald R., 4,328,021, Cl. 65-27.000.

Zolman, Charles T., to General Electric Company. Holder for overload protector. 4,328,438, Cl. 310-68.00R.

Zrnic, Nenad; and Bilen, Branislav, to Institute of Technical Sciences of the Serbian Academy of Sci. & Art., The. Device for separating granulated material from a fluid flow. 4,328,093, Cl. 209-3.000.

Zumpini, Joseph J.; Buda, Paul R.; and Prada, Luis E., to General Electric Company. Fail-safe electronically controlled defrost system. 4,327,556, Cl. 62-153.000.

Zupancic, Ronald L.; and Urry, Lewis F., to Union Carbide Corporation. Electrochemical cell having a resealable vent closure. 4,328,289, Cl. 429-54.000.

Zurawski, Ronald A.: *See*—
Biederman, Richard; and Zurawski, Ronald A., 4,327,764, Cl. 137-192.000.

Zurn Industries, Inc.: *See*—
Kraeling, John B., Jr.; Mann, Alexander B.; and Bukowski, Ronald G., 4,328,103, Cl. 210-411.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF MAY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baer, Terry G.; and Klopfenstein, Wayne A., to Caterpillar Tractor Co. Tire and center support assembling apparatus. Re. 30,918, Cl. 157-1.370.

Bowmar Instrument Corporation: *See*—
Durkee, Gilbert H.; Wareberg, Per G.; and Yoder, Alan C., Re. 30,923, Cl. 200-5.00A.

Caterpillar Tractor Co.: *See*—
Baer, Terry G.; and Klopfenstein, Wayne A., Re. 30,918, Cl. 157-1.370.

Durkee, Gilbert H.; Wareberg, Per G.; and Yoder, Alan C., to Bowmar Instrument Corporation. Calculator keyboard switch with disc spring contact and printed circuit board. Re. 30,923, Cl. 200-5.00A.

Gulf Oil Corporation: *See*—
Heilman, William J.; and Hurley, Daniel J., Re. 30,922, Cl. 524-104.000.

Heilman, William J.; and Hurley, Daniel J., to Gulf Oil Corporation. Vinyl end-capped polyimide oligomers. Re. 30,922, Cl. 524-104.000.

Hurley, Daniel J.: *See*—
Heilman, William J.; and Hurley, Daniel J., Re. 30,922, Cl. 524-104.000.

Klopfenstein, Wayne A.: *See*—
Baer, Terry G.; and Klopfenstein, Wayne A., Re. 30,918, Cl. 157-1.370.

McDowell, James E. Apparatus for setting up folded cartons. Re. 30,921, Cl. 493-124.000.

Otto Zollinger, Inc.: *See*—
Zollinger, Otto, Re. 30,920, Cl. 242-152.100.

Pennsylvania Crusher Corporation: *See*—
Sautter, Daniel C., Re. 30,919, Cl. 241-86.100.

Sautter, Daniel C., to Pennsylvania Crusher Corporation. High-speed rotating crushing machinery. Re. 30,919, Cl. 241-86.100.

Wareberg, Per G.: *See*—
Durkee, Gilbert H.; Wareberg, Per G.; and Yoder, Alan C., Re. 30,923, Cl. 200-5.00A.

Yoder, Alan C.: *See*—
Durkee, Gilbert H.; Wareberg, Per G.; and Yoder, Alan C., Re. 30,923, Cl. 200-5.00A.

Zollinger, Otto, to Otto Zollinger, Inc. Yarn tensioning device and method. Re. 30,920, Cl. 242-152.100.

AGFA-Gevaert AG: *See*—
Schlagheck, Norbert; Schultes, Herbert; and Segers, Hermann R., 264,221, Cl. D16-42.000.

Airline Equipment and Service Company, Inc.: *See*—
Wood, Alfred L., 264,199, Cl. D34-32.000.

Anthos, S.A.: *See*—
Bvlgari, Gianni, 264,188, Cl. D10-39.000.

Aqua-Leisure Industries, Inc.: *See*—
Fireman, Simon C., 264,142, Cl. D2-234.000.

Astra-Meditec Aktiebolag: *See*—
Ekbladh, Fred V. G.; and Olsson, Ivan E., 264,246, Cl. D24-54.000.

Auburn Enterprises, Inc.: *See*—
Olsen, C. Eric, 264,244, Cl. D24-31.000.
Olsen, C. Eric, 264,245, Cl. D24-31.000.

Austin, John J., to Champion International Corporation. Container for food or the like. 264,184, 5-4-82, Cl. D9-416.000.

Automatic Liquid Packaging, Inc.: *See*—
Pagels, Louis T., 264,247, Cl. D24-56.000.

Azzalin, Ernesto. Table. 264,162, 5-4-82, Cl. D6-177.000.

Baker Industries, Inc.: *See*—
Jaretsky, Michael G., 264,194, Cl. D10-106.000.

Bartz, Richard O. Liquid collection and storage container. 264,180, 5-4-82, Cl. D9-337.000.

Bauer, Werner, to Centra Leichtmetallrader Produktions GmbH. Wheel. 264,204, 5-4-82, Cl. D12-210.000.

Beistegui Chirapozu, Jose L., to Beistegui Hermanos, S.A. Bicycle exerciser. 264,235, 5-4-82, Cl. D21-194.000.

Beistegui Hermanos, S.A.: *See*—
Beistegui Chirapozu, Jose L., 264,235, Cl. D21-194.000.

Bell Telephone Laboratories, Incorporated: *See*—
Genaro, Donald M.; Kelly, Thomas J.; and McGarvey, John N., 264,210, Cl. D14-55.000.

Bellofatto, Steven: *See*—
Plumb, William L.; Serbinski, Andrew T.; Bellofatto, Steven; Currier, Melinda M.; and Lai, Edward C. H., 264,219, Cl. D16-31.000.

Bennett, Frank P.: *See*—
Bennett, Ruth K.; and Bennett, Frank P., 264,159, Cl. D6-113.000.

Bennett, Ruth K.; and Bennett, Frank P. Folding shelf. 264,159, 5-4-82, Cl. D6-113.000.

Benson, Daniel J. Tobacco tester. 264,256, 5-4-82, Cl. D27-4.000.

Berteloot, Joseph W. Antfarm. 264,259, 5-4-82, Cl. D30-1.000.

Bianchi, John E. Adjustable holster. 264,240, 5-4-82, Cl. D22-13.000.

Booso, Carol A. Combined bottle and brush. 264,181, 5-4-82, Cl. D9-337.000.

Bott, John A. Vehicle luggage carrier. 264,203, 5-4-82, Cl. D12-157.000.

Bowen, Lee; and Miller, Gordon, to Tyler Refrigeration Corporation. Mobile beverage cooling and dispensing unit. 264,214, 5-4-82, Cl. D15-116.000.

Boyle, Allan J.: *See*—
Kemp, Roy; Compton, Douglas R.; and Boyle, Allan J., 264,182, Cl. D9-352.000.

Bragin, David G.: *See*—
Goldschmidt, Willfred; Kittrell, Wiley A.; and Bragin, David G., 264,253, Cl. D26-63.000.

Brown, Warner K.; and Lanci, Dennis M., to Clark Equipment Company. Lift truck body. 264,201, 5-4-82, Cl. D34-34.000.

Buhk, Randall P., to Steelcase Inc. Chair. 264,149, 5-4-82, Cl. D6-56.000.

Bvlgari, Gianni, to Anthos, S.A. Wrist watch. 264,188, 5-4-82, Cl. D10-39.000.

Caldwell, John W. Chair. 264,150, 5-4-82, Cl. D6-56.000.

Campion, Stanley F., executor: *See*—
Jensen, George B., deceased; and Campion, Stanley F., executor, 264,167, Cl. D7-23.000.

Casey, Eugene J., Jr.: *See*—
Hampel, Wilbur; Johnson, Robert W.; Smith, Douglas W.; and Casey, Eugene J., Jr., 264,173, Cl. D8-8.000.

Centra Leichtmetallrader Produktions GmbH: *See*—
Bauer, Werner, 264,204, Cl. D12-210.000.

Central Trust Company, N.A., The: *See*—
Hauser, Charles; and Johnson, Sharon, 264,263, Cl. D99-28.000.
Hauser, Charles; and Johnson, Sharon, 264,264, Cl. D99-28.000.

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Warriner, William A., 4,843, Cl. 19.000.
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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

247 4,327,447
404 4,327,448

CLASS 3

1.912 4,327,449
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CLASS 323

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72 4,328,461
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104 4,328,521

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154 4,328,526
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362 4,328,535
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CLASS 364
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01 : 4,327,798	4,327,916	4,328,573	4,327,560	4,328,270	4,328,051
02 : 4,327,452	4,327,917	4,328,574	4,327,574	4,328,287	4,328,138
4,327,630	4,327,928	4,328,576	4,327,754	4,328,290	4,328,215
04 : 4,327,498	4,327,929	4,328,586	4,327,779	4,328,313	4,328,260
4,327,680	4,327,931	4,328,588	4,327,819	4,328,355	4,328,474
4,327,908	4,327,934	08 : 4,327,775	4,327,828	4,328,376	4,328,496
4,327,913	4,327,935	4,327,808	4,328,064	4,328,385	4,328,497
4,328,435	4,327,941	4,327,838	4,328,387	4,328,396	4,328,543
4,328,483	4,327,966	4,328,043	4,328,394	4,328,402	4,328,552
4,328,487	4,327,974	4,328,190	16 : 4,327,454	4,328,459	4,328,561
4,328,533	4,327,984	09 : 4,327,480	4,327,592	4,328,475	25 : 4,327,453
05 : 4,327,760	4,327,986	4,327,515	4,327,940	4,328,486	4,327,495
06 : 4,327,465	4,328,005	4,327,521	4,328,203	4,328,546	4,327,497
4,327,472	4,328,013	4,327,615	17 : Re.30,918	4,328,578	4,327,597
4,327,477	4,328,027	4,327,661	4,327,481	18 : Re.30,923	4,327,611
4,327,509	4,328,057	4,327,751	4,327,489	4,327,462	4,327,706
4,327,510	4,328,082	4,327,915	4,327,540	4,327,557	4,327,795
4,327,512	4,328,084	4,327,943	4,327,549	4,327,830	4,327,835
4,327,513	4,328,097	4,328,045	4,327,559	4,327,996	4,327,894
4,327,517	4,328,101	4,328,141	4,327,591	4,328,217	4,327,923
4,327,518	4,328,106	4,328,297	4,327,599	4,328,244	4,327,952
4,327,538	4,328,136	4,328,298	4,327,614	4,328,539	4,328,098
4,327,550	4,328,164	4,328,331	4,327,620	4,328,575	4,328,191
4,327,562	4,328,179	4,328,361	4,327,641	19 : 4,327,537	4,328,277
4,327,565	4,328,185	4,328,397	4,327,652	4,327,850	4,328,288
4,327,578	4,328,197	4,328,421	4,327,660	4,327,939	4,328,322
4,327,608	4,328,245	4,328,472	4,327,671	4,328,037	4,328,406
4,327,624	4,328,257	4,328,473	4,327,694	4,328,317	4,328,413
4,327,639	4,328,264	4,328,564	4,327,716	4,328,581	4,328,434
4,327,657	4,328,271	4,328,566	4,327,726	4,328,583	4,328,443
4,327,665	4,328,281	10 : 4,327,987	4,327,728	20 : 4,327,508	4,328,446
4,327,701	4,328,311	4,328,139	4,327,748	4,328,088	4,328,455
4,327,704	4,328,343	4,328,228	4,327,766	21 : 4,327,705	4,328,585
4,327,721	4,328,389	4,328,390	4,327,800	4,328,422	4,328,591
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4,327,731	4,328,414	12 : Re.30,921	4,327,841	22 : 4,327,541	4,327,487
4,327,738	4,328,417	4,327,514	4,327,842	4,327,742	4,327,528
4,327,793	4,328,436	4,327,555	4,327,845	4,328,090	4,327,532
4,327,804	4,328,450	4,327,575	4,327,865	4,328,094	4,327,536
4,327,809	4,328,452	4,327,655	4,327,891	4,328,134	4,327,563
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4,327,836	4,328,464	4,327,735	4,327,992	4,328,275	4,327,601
4,327,837	4,328,469	4,327,741	4,328,012	4,328,416	4,327,677
4,327,848	4,328,470	4,327,747	4,328,019	23 : 4,327,893	4,327,693
4,327,858	4,328,482	4,327,805	4,328,049	4,327,910	4,327,695
4,327,867	4,328,484	4,327,945	4,328,065	24 : 4,327,500	4,327,732
4,327,879	4,328,491	4,327,954	4,328,111	4,327,576	4,327,770
4,327,895	4,328,492	4,327,972	4,328,120	4,327,668	4,327,773
4,327,901	4,328,502	4,328,063	4,328,125	4,327,734	4,327,778
4,327,907	4,328,525	4,328,105	4,328,126	4,327,764	4,327,791
4,327,909	4,328,553	4,328,516	4,328,145	4,327,787	4,327,882
4,327,912	4,328,554	4,328,535	4,328,177	4,327,885	4,327,888
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